

0530W

00002

137631

PLANT WATER BALANCE
FOR
WAUKEGAN, ILLINOIS
JOHNS-MANVILLE SALES CORPORATION

Prepared by: Manville Service Corporation
P. O. Box 5108
Denver, Colorado 80217
April 20, 1984

INTRODUCTION

The Waukegan, Illinois plant is a multidivision plant owned by the Johns-Manville Sales Corporation. Major products produced at the plant include mineral panels (known as Flexboard), asphalt roofing products, calcium silicate insulation (known as T-12), refractory fiber and sealing components. Water is required for plant operation for direct and indirect cooling of equipment and products, for the production processes themselves, steam production for heating, material transport and domestic uses.

The main water supply is the industrial canal to the north of the plant. The service water system distributes canal water to the entire plant and provides over 90 per cent of the water used. Where higher quality water is required, e.g. for boiler makeup and sanitary uses, city water is used.

After use in the plant, water is discharged to the city sewer (sewage) or pumped to a system of ponds (service and process water). Solids are settled and clear water from the ponds is discharged to the industrial canal for reuse in the plant.

Some water is consumed in the plant. Equipment and product cooling cause water consumption by evaporation (drying), reaction and product moisture content.

This report summarizes plant water supply, discharge and consumption in an overall plant water balance.

SUMMARY

A water survey was conducted at the Waukegan, Illinois plant during January, 1984. Data on water supply, use and discharge were obtained to provide the basis for a plant water balance.

During the month of January, the average amount of water supplied to support plant operation was 4,621,000 gpd. Over 90 per cent of the water supplied was obtained from the industrial canal and the remainder was obtained from the city water system.

Water discharged from the plant and consumed in production is estimated to be 4,229,000 gpd. Over 90 per cent of this amount is discharged to the industrial canal for recycle to the plant. The remainder of the water is discharged to the city sewer or consumed in production.

The water balance shows that 392,000 gpd of the water supplied to the plant are not accounted for. This volume is approximately 8 per cent of the water supplied to the plant.

WATER BALANCE SURVEY

The water balance survey was performed in three parts:

1. Water Supply Metering
2. Water Discharge Metering
3. Lift Station Operation

Figure 1 is a schematic diagram of the water system at Waukegan and shows the process location of flow measuring points. Figure 2 is a general plant arrangement showing the physical location of these points. Table 1 is a copy of the survey data sheet with monitoring locations coded to Figure 2. Table 2 presents flow meter constants.

Data for the water balance was collected from January 2 to January 31, 1984. Information from these three parts was to provide the basis for an overall plant water balance and for assigning water demands to various plant areas. Parts 1 and 2 were successful and an overall plant water balance was developed. Part 3 was not successful, as described later.

Water Supply Metering

Water for plant operations is obtained from the intake canal (service water) and from the city water system (potable and special use water). Both water supplies are metered. Photo 1 is a picture of the service water pumphouse.

Service water is supplied to two distribution systems, designated north and south. Water flow to both systems is measured by an orifice plate, differential pressure meter, recorder, and totalizer. Totalizer readings were recorded every weekday and were used to determine daily flow. The south system supplies most of the plant with water, the north system only supplies the northern most portion of the plant.

City water usage is measured by a totalizing meter in a valve pit at the southeast corner of the plant. The totalizer reading was recorded each weekday to determine daily plant water consumption.

Water Discharge Metering

Water discharged from the plant was measured at two locations:

1. City Sewer
2. Pond Discharge

An existing weir and flow totalizer measure wastewater flow to the city sewer. The totalizer was read each weekday to determine daily flow.

Water discharged from the ponds was measured and recorded by a new weir and ultrasonic flow meter/recorder. Photo 2 is a picture of the weir. The weir was installed where the water enters the industrial canal near the southeast corner of the canal (See Figure 2). The weir is a rectangular weir 33.25 inches wide. Flow was measured, totalized and recorded by a Manning UF-1100. Totalized flow was recorded every weekday and data was used to determine daily flow.

Lift Station Operation

Three lift stations collect plant wastewater and pump it to the system of ponds for treatment. The lift stations are designated Black Ditch, Rock Pile and North Station. Figure 2 shows the location of each station, and photos 3, 4, and 5 show the lift stations themselves.

Each lift station has two pumps with only one pump normally running. The second pump is on standby and can provide additional pumping capacity, if required. The flow for each pump during operation was determined with a non-invasive flow meter. The running time for each pump was recorded by a recording ammeter. The ammeter record also indicated loss of prime so that "non-useful" running time would not contribute to the total volume of water pumped. Table 3 presents the pumping rates of each pump.

Two problems were encountered with determining the amount of water pumped to the ponds:

1. Inconsistent Back Flow of Water
2. Water Recycling

At the end of each pumping cycle, the water in the lines drains to the ponds and back to the lift station pit. This is particularly true of Rock Pile and North Station, which have long pipe lines to the ponds. Water that flows back to the pump pit is then pumped again during the next cycle. Therefore, the water volumes calculated from ammeter records are higher than the volume actually conveyed to the ponds.

The Black Ditch lift station pump pit receives drainage from the south side of the ponds. Again, the water volume calculated from ammeter records is higher than the volume actually pumped. An attempt was made to block the drainage entering the lift station by plugging the culverts. However, water seeped around the plugs and continued to enter the lift station.

Corrections to the data to account for these two problems were not able to be made. The data was not used in the water balance. The overall plant water balance was not adversely affected by not using the data, which were taken to apportion water use within the plant.

WATER BALANCE

The data used as the basis of the water balance were obtained from the plant water survey. Data is presented as water supply, water discharge, and water consumption. January 2 to January 31, 1984 is the period covered by this report.

Water Supply

A total of 138,625,000 gallons of water were supplied to the plant during the survey period. The average daily flow was 4,621,000 gallons (gpd). Total water supply was slightly lower on weekends because some production lines operated five days per week. Weekend flow averaged 4,400,000 to 4,500,000 gpd. Weekday flow ranged from 4,700,000 to 4,850,000 gpd.

Appendix I contains copies of the data sheets from the period this report covers. Appendix II contains the computer output which recorded, converted, and summarized the data. Appendix III contains calculations performed in the water survey and water balance.

City water use averaged 308,000 gpd. The major city water use is for boiler makeup to produce steam for heating and production processes. City water use was lower on weekends and averaged approximately 275,000 gpd. Weekday water use ranged from 285,000 gpd to 357,000 gpd.

Service water use accounted for over 90 per cent of total plant water use at an average flow of 4,315,000 gpd, at a pressure of 70 psi.

Average water flow to the north system remained fairly steady at 84,000 gpd varying from 80,000 to a peak daily flow of 94,000 gpd. Water flow to the south system averaged 4,229,000 gpd and followed a weekday/weekend pattern. Flow on a weekday ranged from 4,215,000 gpd to 4,446,000 gpd, while flow during the weekends averaged approximately 4,100,000 gpd.

Water Discharge

Water discharged from the plant to the city sewer and industrial canal averaged 3,766,000 gpd for the month of January. Wastewater discharged to the city sewer accounted for less than 1 per cent of the total volume discharged, at approximately 3,000 gpd. Wastewater flow varied from a low of 400 gpd to a high of 6,100 gpd. Flow variations are a function of the weekday/weekend cycle and of production rates. However, since this flow is so small compared to the total flow discharged, the variations are not significant to an overall water balance.

The primary discharge from the ponds enters the industrial canal over a weir near the northeast corner of the ponds. The average flow over the weir was 3,513,000 gpd. Weir overflow followed the water supply flow pattern with a 2 to 3 day delay. The lower daily flows, resulting from weekend production shutdowns, were observed on Monday and Tuesday. Pond overflow increased to maximum flows on Saturday and Sunday due to normal production and water use Monday through Friday. Daily flow from the ponds ranged from 2,443,000 to 4,134,000 gpd.

The lowest pond discharge flows occurred during the first week in January and averaged 2,671,000 gpd. This lower flow is due to reduced plant operation and resulting lower water flow to the ponds during the last two weeks in December, 1983. Lower water input to the ponds allowed water levels to gradually decrease. When normal production and water flow resumed during the first week of January, much of the water was retained in the ponds to gradually increase water levels and therefore, pond overflow, to near normal levels. Correcting the daily average flow to account for this "non-steady state" portion of the survey period results in an average daily flow of 3,642,000 gpd.

A secondary water discharge to the industrial canal is located along the north side of the ponds. Drainage is collected along the north face of the ponds and flows to the canal through a 14" line under the road. The estimated discharge volume is 250,000 gpd.

The average daily discharge rate for steady state conditions is estimated to be 3,892,000 gpd.

Water Consumption

Plant water consumption which can be identified and estimated include evaporation, product moisture content and steam consumption.

Evaporation from the pond surface occurs as natural evaporation and as forced evaporation caused by increased temperatures from equipment and process cooling. Natural evaporation was estimated using information from "Evaporation Maps for the United States" U.S. Weather Bureau, and a total pond surface area of approximately 57 acres. Natural evaporation is estimated to be 50,000 gpd.

Forced evaporation was estimated from average flow to the ponds, and the temperature differential between water entering and leaving the ponds. The measured differential was approximately 100°F and results in an estimated 40,000 gpd of forced evaporation. *577,800 gpd = 21.2 million gal per year*

Significant water consumption results from the production of mineral panels and T-12, the two most water intensive processes at the plant. Water is consumed by drying the wet product and, to a lesser extent, by process reactions. Total water consumed in these two processes is estimated to be 25,000 to 50,000 gpd.

Water consumption from steam use was estimated from boiler operating parameters, including steam production, blowdown rate, and makeup rate. Estimated consumption is 220,000 gpd.

Total estimated water consumption at the Waukegan plant is 335,000 gpd.

Water Balance

Water flow into the plant consists of city and service water flows and equal 4,621,000 gpd. Water leaving the plant consists of water discharges (to the industrial canal and city sewer) and water consumption (evaporation, product moisture content, and steam consumption) and equals 4,229,000 gpd. Figure 3 is a summary diagram of the overall water balance.

These totals show that 392,000 gpd supplied to the plant are unaccounted for. This volume of water is approximately 8 per cent of the total amount of water supplied to the plant.

TABLE 1
MONITORING LOCATIONS
(USE WITH FIGURE 2)

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: _____

TEMP - AVERAGE: _____ °F

CLOUD COVER: 0% (CLEAR), 25% 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: _____ INCHES

WATER FLOW:

① CITY WATER METER READING: _____ TIME: _____

CITY WATER METER, RSD, READING: _____ TIME: _____

CITY WATER METER, POWER HOUSE, READING: _____ TIME: _____

② SERVICE WATER METER - NORTH, READING: _____ TIME: _____

③ SERVICE WATER METER - SOUTH, READING: _____ TIME: _____

SERVICE WATER CHART RECORDERS: OKAY, NOT OKAY, ACTION: _____

AMMETERS:

④ BLACK DITCH, EAST PUMP: OKAY, NOT OKAY, ACTION: _____

④ BLACK DITCH, WEST PUMP: OKAY, NOT OKAY, ACTION: _____

⑤ ROCK PILE, NORTH PUMP: OKAY, NOT OKAY, ACTION: _____

⑤ ROCK PILE, SOUTH PUMP: OKAY, NOT OKAY, ACTION: _____

⑥ NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION: _____

⑥ NORTH STATION, WEST PUMP: OKAY, NOT OKAY, ACTION: _____

⑦ CITY-SANITARY SEWER WEIR TOTALIZER READING: _____ TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

⑧ POND WATER DISCHARGE WEIR TOTALIZER READING: _____ TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

GENERAL COMMENTS: _____

TABLE 2
FLOW TOTALIZER CONSTANTS

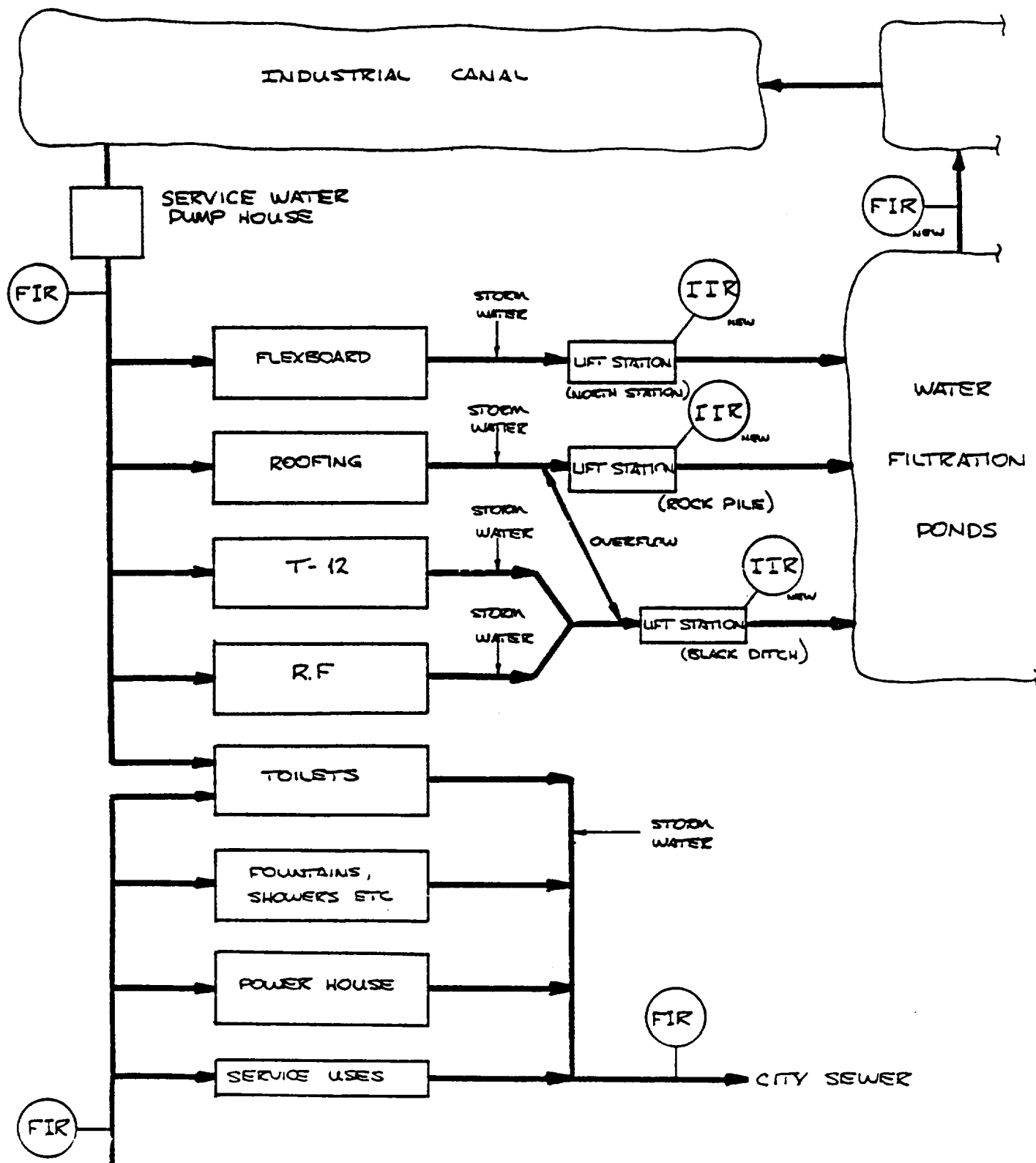
City Water Meter	1.0
Sanitary Sewer Meter	100.0
Pond Weir Meter	1000.0
Service Water Meter, North	1965
South	46070

TABLE 3
LIFT STATION PUMPING RATES*

Black Ditch, East	4570 GPM
West	4350 GPM
Rock Pile, North	2450 GPM
South	2810 GPM
North Station, East	2590 GPM
West	2370 GPM

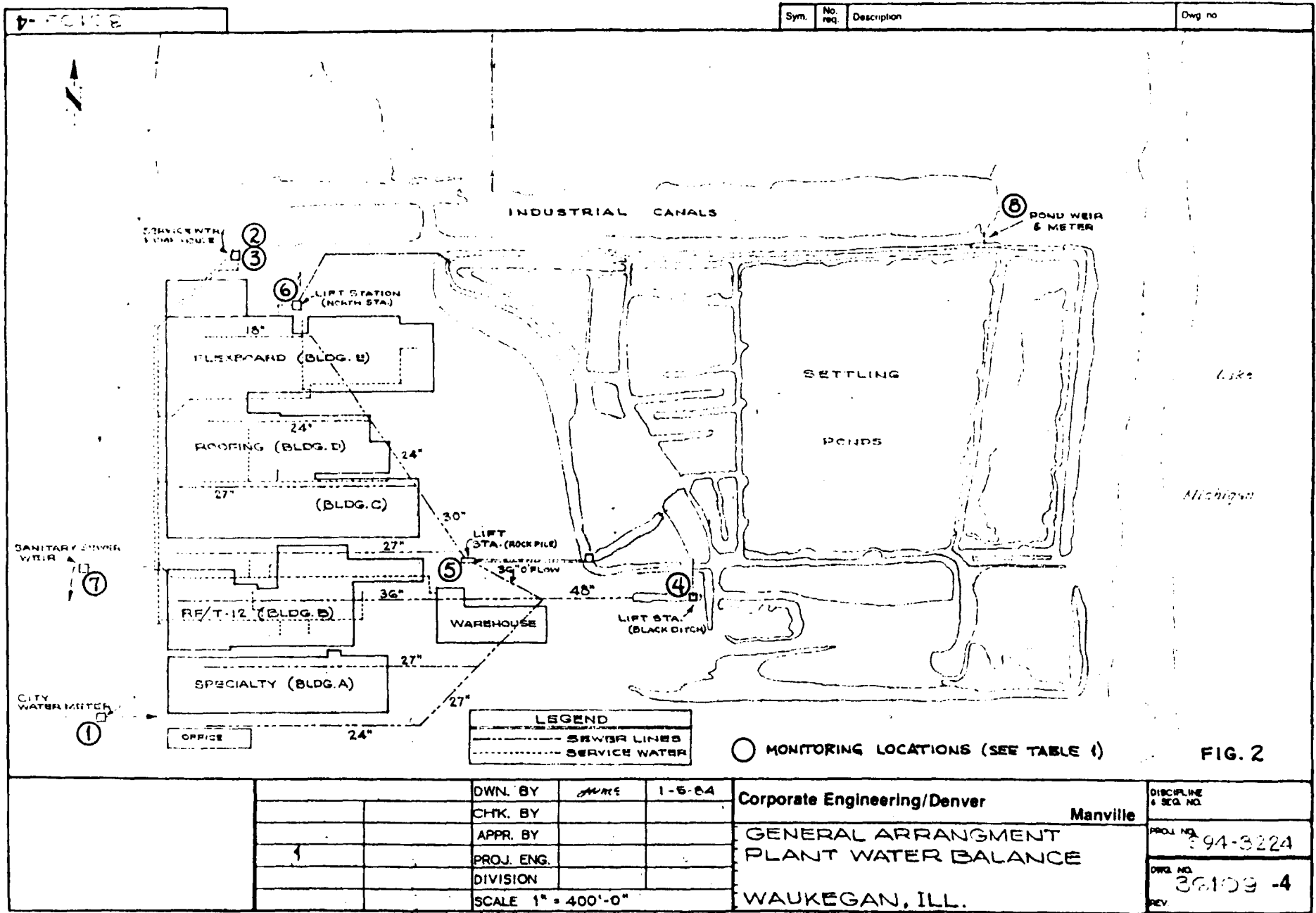
*As determined by non-invasive flow measurement.

FIGURE 1
SCHEMATIC WATER DIAGRAM
AND SURVEY MONITORING LOCATIONS
WAUKEGAN, ILL.



CITY WATER

FIR - FLOW INDICATING RECORDER
IIR - AMMETER RECORDER



Sym.	No. req.	Description	Dwg no.
------	----------	-------------	---------

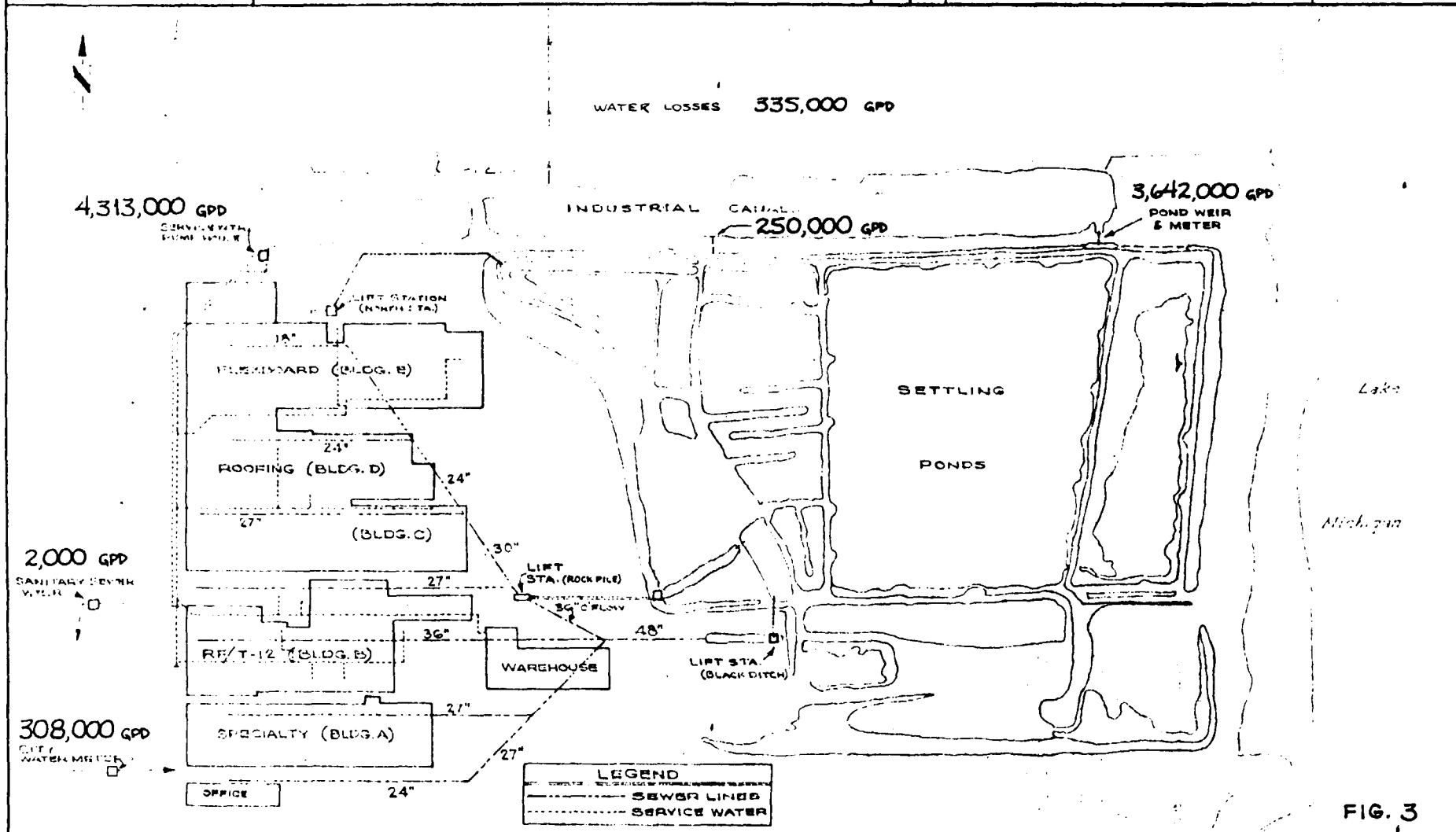


FIG. 3

			DWN. BY	APR 15	1-5-84	Corporate Engineering/Denver	Manville	DISCIPLINE & SEQ. NO.	
			CHK. BY					PROJ. NO.	
			APPR. BY			GENERAL ARRANGMENT PLANT WATER BALANCE WATER BALANCE SUMMARY WAUKEGAN, ILL.	94-3224	DWG. NO. -4	
			PROJ. ENG.						REV.
			DIVISION						
			SCALE 1" = 400'-0"						

Photo 1
Service Water Pump House



Photo 2
Pond Discharge Weir (new)



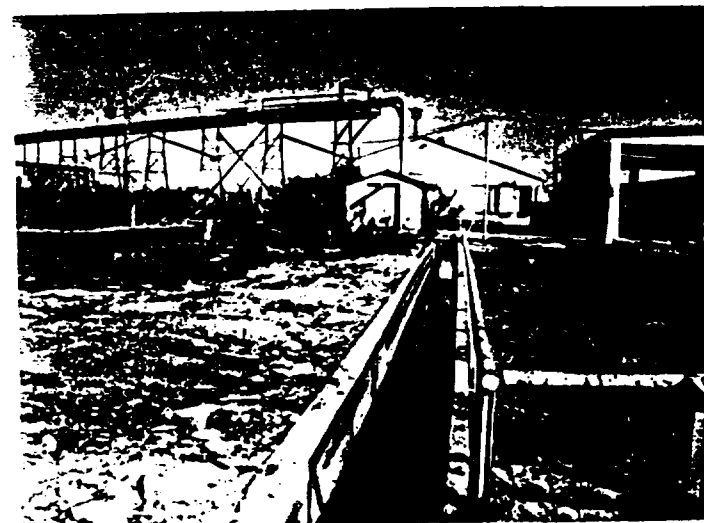
Photo 3
Black Ditch Lift Station



Photo 4
Rock Pile Lift Station



Photo 5
North Station Lift Station



WEATHER CONDITIONS, to date:

=====

DATE: 04-JAN-84

TIME: 000

AVG. TEMPERATURE: 29

CLOUD COVER: 0 %

PRECIPITATION: NONE AMOUNT: 0 INCHES

WATER FLOW:

=====

TOTAL from 03-DEC-84

=====

YEAR-TO-DATE

=====

CITY WATER METER READING:	636,076,000.0	330,000.0 gals.	1,580,000 gals.
CITY WATER, RSD, METER READING:	79,778,000.0	27,200.0 gals.	86,100 gals.
CITY WATER, POWER HOUSE, METER READING:	20,730.0	399,000.0 gals.	1,862,530 gals.
SERVICE WATER METER, NORTH, READING:	9,281.5	86,655.7 gals.	405,968 gals.
SERVICE WATER METER, SOUTH, READING:	9,645.4	4,252,300.0 gals.	18,953,200 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	0.0	0.0 gals.	0 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	1,340.0	5,831,200.0 gals.	27,476,300 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	346.0	972,011.0 gals.	1,618,150 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	631.0	1,633,600.0 gals.	1,633,600 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	328.0	776,907.0 gals.	4,405,630 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,297,460.0	1,900.0 gals.	2,300 gals.
POND WATER WEIR TOTALIZER READING:	140,136.0	2,599,000.0 gals.	12,389,000 gals.

WEDNESDAY - ALL RECORDERS OK - PUMPS AT N. STATION LEAD/LAG SWITCHED - SNOW IS
CONTINUING TO MELT - PIPE PLUGS ORDERED FOR BLACK DITCH SEWER LINES

WAUKEGAN SERVICE WATER SURVEY

WEATHER CONDITIONS, to date:

DATE: 05-JAN-84

TIME: 000

AVG. TEMPERATURE: 29

CLOUD COVER: 0 %

PRECIPITATION: NONE AMOUNT: 0 INCHES

WATER FLOW:

TOTAL from 04-JAN-84

YEAR-TO-DATE

		TOTAL from 04-JAN-84	YEAR-TO-DATE
CITY WATER METER READING:	636,391,000.0	315,000.0 gals.	1,895,000 gals.
CITY WATER, RSD, METER READING:	79,803,800.0	25,800.0 gals.	111,900 gals.
CITY WATER, POWER HOUSE, METER READING:	21,361.0	335,692.0 gals.	2,198,220 gals.
SERVICE WATER METER, NORTH, READING:	9,325.1	85,673.2 gals.	491,642 gals.
SERVICE WATER METER, SOUTH, READING:	9,736.9	4,215,410.0 gals.	23,168,600 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	9.0	41,147.8 gals.	41,148 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	1,428.0	6,214,140.0 gals.	33,690,400 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	374.0	1,050,670.0 gals.	2,668,820 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	792.0	2,050,410.0 gals.	3,684,000 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	10.0	23,686.2 gals.	4,429,320 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,297,478.0	1,800.0 gals.	4,100 gals.
POND WATER WEIR TOTALIZER READING:	142,808.0	2,672,000.0 gals.	15,061,000 gals.

THURSDAY - ALL RECORDERS OK - AGAIN, VERY HEAVY SNOW MELT - N. STATION PUMP CHG.
 WAS NO IMPROVEMENT, WILL SWITCH BACK TO ORIGINAL PUMPING PLAN

WEATHER CONDITIONS, to date:

=====

DATE: 06-JAN-84

TIME: 000

AVG. TEMPERATURE: 32

CLOUD COVER: 0 %

PRECIPITATION: NONE AMOUNT: 0 INCHES

WATER FLOW:

=====

TOTAL from 05-JAN-84

=====

YEAR-TO-DATE

=====

CITY WATER METER READING:	636,677,000.0	286,000.0 gals.	2,181,000 gals.
CITY WATER, RSD, METER READING:	79,824,900.0	21,100.0 gals.	133,000 gals.
CITY WATER, POWER HOUSE, METER READING:	22,019.0	350,056.0 gals.	2,548,280 gals.
SERVICE WATER METER, NORTH, READING:	9,372.8	93,730.9 gals.	585,372 gals.
SERVICE WATER METER, SOUTH, READING:	9,830.4	4,307,550.0 gals.	27,476,200 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	0.0	0.0 gals.	41,148 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	1,440.0	6,266,360.0 gals.	39,956,800 gals.
ROCK FILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK FILE, TOTAL MINUTES, SOUTH PUMP:	341.0	957,965.0 gals.	3,626,780 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	756.0	1,957,210.0 gals.	5,641,210 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	30.0	71,058.6 gals.	4,500,380 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,297,505.0	2,700.0 gals.	6,800 gals.
POND WATER WEIR TOTALIZER READING:	145,779.0	2,971,000.0 gals.	18,032,000 gals.

FRIDAY - ALL RECORDERS OK - CHANGING CHARTS IS ALL AMMETERS THIS AFTERNOON -
 ABOVE FREEZING TEMPS. CONT. SNOW MELT - N. STATION IS BACK TO NORMAL MODE

WEATHER CONDITIONS, to date:

=====

DATE: 09-JAN-84

TIME: 800

AVG. TEMPERATURE: 21

CLOUD COVER: 0 %

PRECIPITATION: NONE AMOUNT: 0 INCHES

WATER FLOW:

=====

TOTAL from 06-JAN-84

=====

YEAR-TO-DATE

=====

CITY WATER METER READING:	637,491,000.0	814,000.0 gals.	2,995,000 gals.
CITY WATER, RSD, METER READING:	79,889,400.0	64,500.0 gals.	197,500 gals.
CITY WATER, POWER HOUSE, METER READING:	23,814.0	954,940.0 gals.	3,503,220 gals.
SERVICE WATER METER, NORTH, READING:	9,504.0	257,808.0 gals.	843,181 gals.
SERVICE WATER METER, SOUTH, READING:	10,093.6	12,125,600.0 gals.	39,601,800 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	0.0	0.0 gals.	41,148 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	3,531.0	15,365,600.0 gals.	55,322,400 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	310.0	870,877.0 gals.	4,497,660 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	257.0	665,347.0 gals.	6,306,560 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	1,309.0	3,100,520.0 gals.	7,600,900 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,297,667.0	16,200.0 gals.	23,000 gals.
POND WATER WEIR TOTALIZER READING:	155,804.0	10,025,000.0 gals.	28,057,000 gals.

MONDAY - ALL RECORDERS OK - PIPE PLUGS FOR BLACK DITCH SHOULD BE IN THIS WEEK

WEATHER CONDITIONS, to date:

=====

DATE: 10-JAN-84

TIME: 000

AVG. TEMPERATURE: 23

CLOUD COVER: 0 %

PRECIPITATION: NONE AMOUNT: 0 INCHES

WATER FLOW:

=====

TOTAL from 09-JAN-84

=====

YEAR-TO-DATE

=====

CITY WATER METER READING:	637,791,000.0	300,000.0 gals.	3,295,000 gals.
CITY WATER, RSD, METER READING:	79,913,200.0	23,800.0 gals.	221,300 gals.
CITY WATER, POWER HOUSE, METER READING:	24,488.0	358,568.0 gals.	3,861,790 gals.
SERVICE WATER METER, NORTH, READING:	9,547.7	85,870.9 gals.	929,052 gals.
SERVICE WATER METER, SOUTH, READING:	187.5	4,325,970.0 gals.	43,927,800 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	0.0	0.0 gals.	41,148 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	1,422.0	6,188,030.0 gals.	61,510,400 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	336.0	943,918.0 gals.	5,441,580 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	0.0	0.0 gals.	6,306,560 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	600.0	1,421,170.0 gals.	9,022,070 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,297,761.0	9,400.0 gals.	32,400 gals.
POND WATER WEIR TOTALIZER READING:	159,028.0	3,224,000.0 gals.	31,281,000 gals.

TUESDAY - ALL RECORDERS OK

WAUKEGA SERVICE WATER SURVEY

Page 23

WEATHER CONDITIONS, to date:

=====

DATE: 11-JAN-84

TIME: 000

AVG. TEMPERATURE: 8

CLOUD COVER: 0 %

PRECIPITATION: NONE AMOUNT: 0 INCHES

WATER FLOW:		TOTAL from 10-JAN-84	YEAR-TO-DATE
		=====	=====
CITY WATER METER READING:	638,111,000.0	320,000.0 gals.	3,615,000 gals.
CITY WATER, RSD, METER READING:	79,939,300.0	26,100.0 gals.	247,400 gals.
CITY WATER, POWER HOUSE, METER READING:	25,223.0	391,020.0 gals.	4,252,810 gals.
SERVICE WATER METER, NORTH, READING:	9,591.5	86,066.6 gals.	1,015,120 gals.
SERVICE WATER METER, SOUTH, READING:	283.9	4,441,150.0 gals.	48,368,900 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	8.0	36,575.8 gals.	77,724 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	1,440.0	6,266,360.0 gals.	67,776,800 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	316.0	887,733.0 gals.	6,329,310 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	0.0	0.0 gals.	6,306,560 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	570.0	1,350,110.0 gals.	10,372,200 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,297,771.0	1,000.0 gals.	33,400 gals.
POND WATER WEIR TOTALIZER READING:	162,378.0	3,350,000.0 gals.	34,631,000 gals.

WEDNESDAY - ALL RECORDERS OK

WEATHER CONDITIONS, to date:

DATE: 12-JAN-84

TIME: 000

AVG. TEMPERATURE: 14

CLOUD COVER: 0 %

PRECIPITATION: NONE AMOUNT: 0 INCHES

WATER FLOW:

TOTAL from 11-JAN-84

YEAR-TO-DATE

CITY WATER METER READING:	638,434,000.0	323,000.0 gals.	3,938,000 gals.
CITY WATER, RSD, METER READING:	79,974,900.0	35,600.0 gals.	283,000 gals.
CITY WATER, POWER HOUSE, METER READING:	25,919.0	370,272.0 gals.	4,623,080 gals.
SERVICE WATER METER, NORTH, READING:	9,635.0	85,477.5 gals.	1,100,600 gals.
SERVICE WATER METER, SOUTH, READING:	378.4	4,353,620.0 gals.	52,722,500 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	5.0	22,859.9 gals.	100,584 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	1,440.0	6,266,360.0 gals.	74,043,200 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	324.0	910,207.0 gals.	7,239,520 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	0.0	0.0 gals.	6,306,560 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	565.0	1,338,270.0 gals.	11,710,500 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,297,782.0	1,100.0 gals.	34,500 gals.
POND WATER WEIR TOTALIZER READING:	165,706.0	3,328,000.0 gals.	37,959,000 gals.

THURSDAY - ALL RECORDERS OK

WAUKEGAN SERVICE WATER SURVEY

Page 25

WEATHER CONDITIONS, to date:

=====

DATE: 13-JAN-84

TIME: 800

AVG. TEMPERATURE: 22

CLOUD COVER: 0 %

PRECIPITATION: NONE AMOUNT: 0 INCHES

WATER FLOW:

=====

TOTAL from 12-JAN-84

=====

YEAR-TO-DATE

=====

CITY WATER METER READING:	638,766,000.0	332,000.0 gals.	4,270,000 gals.
CITY WATER, RSD, METER READING:	80,011,000.0	36,100.0 gals.	319,100 gals.
CITY WATER, POWER HOUSE, METER READING:	26,675.0	402,192.0 gals.	5,025,270 gals.
SERVICE WATER METER, NORTH, READING:	9,678.0	84,495.0 gals.	1,185,090 gals.
SERVICE WATER METER, SOUTH, READING:	472.2	4,321,370.0 gals.	57,043,900 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	10.0	45,719.8 gals.	146,303 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	1,440.0	6,266,360.0 gals.	80,309,500 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	318.0	893,351.0 gals.	8,132,870 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	0.0	0.0 gals.	6,306,560 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	570.0	1,350,110.0 gals.	13,060,600 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,297,796.0	1,400.0 gals.	35,900 gals.
POND WATER WEIR TOTALIZER READING:	169,431.0	3,725,000.0 gals.	41,684,000 gals.

FRIDAY - ALL RECORDERS OK

WEATHER CONDITIONS, to date:

DATE: 16-JAN-84
 TIME: 800
 AVG. TEMPERATURE: 15
 CLOUD COVER: 100 %
 PRECIPITATION: SNOW AMOUNT: 4.5 INCHES

WATER FLOW:

TOTAL from 13-JAN-84

YEAR-TO-DATE

		TOTAL from 13-JAN-84	YEAR-TO-DATE
CITY WATER METER READING:	639,589,000.0	823,000.0 gals.	5,093,000 gals.
CITY WATER, RSD, METER READING:	80,082,100.0	71,100.0 gals.	390,200 gals.
CITY WATER, POWER HOUSE, METER READING:	28,470.0	954,940.0 gals.	5,980,210 gals.
SERVICE WATER METER, NORTH, READING:	9,800.3	240,319.0 gals.	1,425,410 gals.
SERVICE WATER METER, SOUTH, READING:	741.1	12,388,200.0 gals.	69,432,100 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	16.0	73,151.7 gals.	219,455 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	4,218.0	18,355,200.0 gals.	98,664,700 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	448.0	1,258,560.0 gals.	9,391,420 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	15.0	38,833.5 gals.	6,345,390 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	1,200.0	2,842,340.0 gals.	15,902,900 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,297,816.0	2,000.0 gals.	37,900 gals.
POND WATER WEIR TOTALIZER READING:	180,784.0	11,353,000.0 gals.	53,037,000 gals.

MONDAY - ALL RECORDERS OK

WEATHER CONDITIONS, to date:

=====

DATE: 17-JAN-84

TIME: 800

AVG. TEMPERATURE: 13

CLOUD COVER: 70 %

PRECIPITATION: NONE AMOUNT: 0 INCHES

WATER FLOW:

=====

TOTAL from 16-JAN-84

=====

YEAR-TO-DATE

=====

CITY WATER METER READING:	639,917,000.0	328,000.0 gals.	5,421,000 gals.
CITY WATER, RSD, METER READING:	80,117,400.0	35,300.0 gals.	425,500 gals.
CITY WATER, POWER HOUSE, METER READING:	29,226.0	402,192.0 gals.	6,382,400 gals.
SERVICE WATER METER, NORTH, READING:	9,844.4	86,657.7 gals.	1,512,070 gals.
SERVICE WATER METER, SOUTH, READING:	836.6	4,399,690.0 gals.	73,831,800 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	6.0	27,431.9 gals.	246,887 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	1,440.0	6,266,360.0 gals.	104,931,000 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	308.0	865,258.0 gals.	10,256,700 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	12.0	31,066.8 gals.	6,376,460 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	474.0	1,122,730.0 gals.	17,025,600 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,297,829.0	1,300.0 gals.	39,200 gals.
POND WATER WEIR TOTALIZER READING:	184,126.0	3,342,000.0 gals.	56,379,000 gals.

TUESDAY - ALL RECORDERS OK

WEATHER CONDITIONS, to date:

=====

DATE: 18-JAN-84

TIME: 800

AVG. TEMPERATURE: 8

CLOUD COVER: 0 %

PRECIPITATION: NONE AMOUNT: 0 INCHES

WATER FLOW:

=====

TOTAL from 17-JAN-84

=====

YEAR-TO-DATE

=====

CITY WATER METER READING:	640,248,000.0	331,000.0 gals.	5,752,000 gals.
CITY WATER, RSD, METER READING:	80,152,500.0	35,100.0 gals.	460,600 gals.
CITY WATER, POWER HOUSE, METER READING:	29,942.0	380,912.0 gals.	6,763,320 gals.
SERVICE WATER METER, NORTH, READING:	9,890.1	89,799.0 gals.	1,601,870 gals.
SERVICE WATER METER, SOUTH, READING:	930.6	4,330,580.0 gals.	78,162,400 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	0.0	0.0 gals.	246,887 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	1,440.0	6,266,360.0 gals.	111,197,000 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	304.0	854,021.0 gals.	11,110,700 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	24.0	62,133.6 gals.	6,438,590 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	637.0	1,508,810.0 gals.	18,534,400 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,297,844.0	1,500.0 gals.	40,700 gals.
POND WATER WEIR TOTALIZER READING:	187,628.0	3,502,000.0 gals.	59,881,000 gals.

TUESDAY - ALL RECORDERS OK - RECEIVED SEWER PIPE PLUGS FOR BLACK DITCH, WAITING FOR INSTRUCTIONS

WAUKEGAN SERVICE WATER SURVEY

Page 29

WEATHER CONDITIONS, to date:

=====

DATE: 19-JAN-84

TIME: 800

AVG. TEMPERATURE: -3

CLOUD COVER: 0 %

PRECIPITATION: NONE AMOUNT: 0 INCHES

WATER FLOW:	TOTAL from 18-JAN-84		YEAR-TO-DATE
=====	=====		=====
CITY WATER METER READING:	640,555,000.0	307,000.0 gals.	6,059,000 gals.
CITY WATER, RSD, METER READING:	80,177,900.0	25,400.0 gals.	486,000 gals.
CITY WATER, POWER HOUSE, METER READING:	30,618.0	359,632.0 gals.	7,122,950 gals.
SERVICE WATER METER, NORTH, READING:	9,933.6	85,477.5 gals.	1,687,340 gals.
SERVICE WATER METER, SOUTH, READING:	1,025.4	4,367,440.0 gals.	82,529,800 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	0.0	0.0 gals.	246,887 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	1,440.0	6,266,360.0 gals.	117,464,000 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	298.0	837,165.0 gals.	11,947,900 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	14.0	36,244.6 gals.	6,474,840 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	600.0	1,421,170.0 gals.	19,955,600 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,297,852.0	800.0 gals.	41,500 gals.
POND WATER WEIR TOTALIZER READING:	191,034.0	3,406,000.0 gals.	63,287,000 gals.

THURSDAY - ALL RECORDERS OK - EXTREMELY LOW TEMPS TONIGHT MIGHT FREEZE POND
 WATER WEIR (-15 TO -20 EXPECTED) - BOOTS TO BE INSTALLED NEXT WEEK

WEATHER CONDITIONS, to date:

=====

DATE: 20-JAN-84

TIME: 800

AVG. TEMPERATURE: -1

CLOUD COVER: 0 %

PRECIPITATION: NONE AMOUNT: 0 INCHES

WATER FLOW:

=====

TOTAL from 19-JAN-84

=====

YEAR-TO-DATE

=====

CITY WATER METER READING:	640,881,000.0	326,000.0 gals.	6,385,000 gals.
CITY WATER, RSD, METER READING:	80,206,700.0	28,800.0 gals.	514,800 gals.
CITY WATER, POWER HOUSE, METER READING:	31,290.0	357,504.0 gals.	7,480,450 gals.
SERVICE WATER METER, NORTH, READING:	9,977.4	86,068.5 gals.	1,773,410 gals.
SERVICE WATER METER, SOUTH, READING:	1,120.5	4,381,260.0 gals.	86,911,100 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	0.0	0.0 gals.	246,887 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	1,440.0	6,266,360.0 gals.	123,730,000 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	318.0	893,351.0 gals.	12,841,200 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	0.0	0.0 gals.	6,474,840 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	615.0	1,456,700.0 gals.	21,412,300 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,297,856.0	400.0 gals.	41,900 gals.
POND WATER WEIR TOTALIZER READING:	194,535.0	3,501,000.0 gals.	66,788,000 gals.

FRIDAY - ALL RECORDERS OK

WAUKEGAN SERVICE WATER SURVEY

WEATHER CONDITIONS, to date:

=====

DATE: 23-JAN-84

TIME: 800

AVG. TEMPERATURE: 19

CLOUD COVER: 50 %

PRECIPITATION: SNOW AMOUNT: 1 INCHES

WATER FLOW:		TOTAL from 20-JAN-84	YEAR-TO-DATE
=====		=====	=====
CITY WATER METER READING:	641,824,000.0	943,000.0 gals.	7,328,000 gals.
CITY WATER, RSD, METER READING:	80,262,700.0	56,000.0 gals.	570,800 gals.
CITY WATER, POWER HOUSE, METER READING:	33,899.0	1,387,990.0 gals.	8,868,440 gals.
SERVICE WATER METER, NORTH, READING:	10,098.1	237,176.0 gals.	2,010,590 gals.
SERVICE WATER METER, SOUTH, READING:	1,385.4	12,203,900.0 gals.	99,115,000 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	0.0	0.0 gals.	246,887 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	3,780.0	16,449,200.0 gals.	140,179,000 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	516.0	1,449,590.0 gals.	14,290,800 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	15.0	38,833.5 gals.	6,513,670 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	792.0	1,875,950.0 gals.	23,288,300 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,297,871.0	1,500.0 gals.	43,400 gals.
POND WATER WEIR TOTALIZER READING:	205,125.0	10,590,000.0 gals.	77,378,000 gals.

MONDAY - AMMETERS RAN OUT OF TAPE AT APPROX. 3:00PM SUNDAY - ALL OTHERS OK

WAUKEGAN SERVICE WATER SURVEY

Page 32

WEATHER CONDITIONS, to date:

=====

DATE: 24-JAN-84

TIME: 000

AVG. TEMPERATURE: 27

CLOUD COVER: 0 %

PRECIPITATION: NONE

AMOUNT: 0 INCHES

WATER FLOW:

=====

TOTAL from 23-JAN-84

=====

YEAR-TO-DATE

=====

CITY WATER METER READING:	642,180,000.0	356,000.0 gals.	7,684,000 gals.
CITY WATER, RSD, METER READING:	80,291,500.0	28,800.0 gals.	599,600 gals.
CITY WATER, POWER HOUSE, METER READING:	34,857.0	509,656.0 gals.	9,378,100 gals.
SERVICE WATER METER, NORTH, READING:	139.1	80,565.0 gals.	2,091,150 gals.
SERVICE WATER METER, SOUTH, READING:	1,480.0	4,358,220.0 gals.	103,473,000 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	300.0	1,371,590.0 gals.	1,618,480 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	510.0	2,219,340.0 gals.	142,399,000 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	190.0	533,763.0 gals.	14,824,600 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	750.0	1,941,670.0 gals.	8,455,350 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	7.0	16,580.3 gals.	23,304,900 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,297,876.0	500.0 gals.	43,900 gals.
POND WATER WEIR TOTALIZER READING:	208,652.0	3,527,000.0 gals.	80,905,000 gals.

TUESDAY - ALL RECORDERS OK

WAUKEGAN SERVICE WATER SURVEY

Page 33

WEATHER CONDITIONS, to date:

=====

DATE: 25-JAN-84

TIME: 800

AVG. TEMPERATURE: 31

CLOUD COVER: 0 %

PRECIPITATION: NONE AMOUNT: 0 INCHES

WATER FLOW:

=====

TOTAL from 24-JAN-84

=====

YEAR-TO-DATE

=====

CITY WATER METER READING:	642,537,000.0	357,000.0 gals.	8,041,000 gals.
CITY WATER, RSD, METER READING:	80,318,000.0	26,500.0 gals.	626,100 gals.
CITY WATER, POWER HOUSE, METER READING:	35,809.0	506,464.0 gals.	9,884,560 gals.
SERVICE WATER METER, NORTH, READING:	179.3	78,993.0 gals.	2,170,150 gals.
SERVICE WATER METER, SOUTH, READING:	1,571.9	4,233,830.0 gals.	107,707,000 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	360.0	1,645,910.0 gals.	3,264,390 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	1,080.0	4,699,770.0 gals.	147,098,000 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	288.0	809,073.0 gals.	15,633,600 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	0.0	0.0 gals.	8,455,350 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	90.0	213,176.0 gals.	23,518,000 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,297,917.0	4,100.0 gals.	48,000 gals.
POND WATER WEIR TOTALIZER READING:	212,266.0	3,614,000.0 gals.	84,519,000 gals.

WEDNESDAY - ALL RECORDERS OK - EXCEPT NORTH STATION EAST WAS UNPLUGGED

WAUKEGAN SERVICE WATER SURVEY

Page 34

WEATHER CONDITIONS, to date:

=====

DATE: 26-JAN-84

TIME: 000

AVG. TEMPERATURE: 30

CLOUD COVER: 0 %

PRECIPITATION: NONE AMOUNT: 0 INCHES

WATER FLOW:

=====

TOTAL from 25-JAN-84

=====

YEAR-TO-DATE

=====

CITY WATER METER READING:	642,869,000.0	332,000.0 gals.	8,373,000 gals.
CITY WATER, RSD, METER READING:	80,350,000.0	32,000.0 gals.	658,100 gals.
CITY WATER, POWER HOUSE, METER READING:	36,594.0	417,620.0 gals.	10,302,200 gals.
SERVICE WATER METER, NORTH, READING:	220.8	81,547.5 gals.	2,251,690 gals.
SERVICE WATER METER, SOUTH, READING:	1,667.5	4,404,290.0 gals.	112,111,000 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	17.0	77,723.7 gals.	3,342,120 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	1,400.0	6,092,300.0 gals.	153,191,000 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	336.0	943,918.0 gals.	16,577,600 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	360.0	932,004.0 gals.	9,387,350 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	165.0	390,822.0 gals.	23,908,800 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,297,950.0	3,300.0 gals.	51,300 gals.
POND WATER WEIR TOTALIZER READING:	216,400.0	4,134,000.0 gals.	88,653,000 gals.

THURSDAY - ALL RECORDERS OK - PIPE PLUGS INSTALL AT BLACK DITCH BY 2:00PM
BECAUSE OF RUPTURED PIPE THERE IS SOME LEAKAGE AROUND PIPE.

WAUKEGAN SERVICE WATER SURVEY

WEATHER CONDITIONS, to date:

=====

DATE: 27-JAN-84

TIME: 800

AVG. TEMPERATURE: 30

CLOUD COVER: 0 %

PRECIPITATION: NONE AMOUNT: 0 INCHES

WATER FLOW:

=====

TOTAL from 26-JAN-84

=====

YEAR-TO-DATE

=====

CITY WATER METER READING:	643,168,000.0	299,000.0 gals.	8,672,000 gals.
CITY WATER, RSD, METER READING:	80,377,800.0	27,800.0 gals.	685,900 gals.
CITY WATER, POWER HOUSE, METER READING:	37,150.0	295,792.0 gals.	10,598,000 gals.
SERVICE WATER METER, NORTH, READING:	262.0	80,958.0 gals.	2,332,650 gals.
SERVICE WATER METER, SOUTH, READING:	1,762.2	4,362,830.0 gals.	116,474,000 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	390.0	1,783,070.0 gals.	5,125,190 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	990.0	4,308,120.0 gals.	157,499,000 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	354.0	994,485.0 gals.	17,572,000 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	0.0	0.0 gals.	9,387,350 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	211.0	499,779.0 gals.	24,408,600 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,298,011.0	6,100.0 gals.	57,400 gals.
POND WATER WEIR TOTALIZER READING:	220,172.0	3,772,000.0 gals.	92,425,000 gals.

FRIDAY - ALL RECORDERS OK - STILL SOME LEAKAGE AT BLACK DITCH AROUND PIPE
HOWEVER, POND WATER WEIR HAS SHOWN A MARKED INCREASE IN FLOW.

WEATHER CONDITIONS, to date:

=====

DATE: 30-JAN-84

TIME: 800

AVG. TEMPERATURE: 25

CLOUD COVER: 0 %

PRECIPITATION: NONE AMOUNT: 0 INCHES

WATER FLOW:

=====

TOTAL from 27-JAN-84

=====

YEAR-TO-DATE

=====

CITY WATER METER READING:	643,979,000.0	811,000.0 gals.	9,483,000 gals.
CITY WATER, RSD, METER READING:	80,476,600.0	98,800.0 gals.	784,700 gals.
CITY WATER, POWER HOUSE, METER READING:	38,627.0	785,764.0 gals.	11,383,700 gals.
SERVICE WATER METER, NORTH, READING:	383.4	238,551.0 gals.	2,571,200 gals.
SERVICE WATER METER, SOUTH, READING:	2,032.0	12,429,700.0 gals.	128,904,000 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	422.0	1,929,380.0 gals.	7,054,570 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	3,366.0	14,647,600.0 gals.	172,147,000 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	758.0	2,129,430.0 gals.	19,701,500 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	14.0	36,244.6 gals.	9,423,600 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	198.0	468,987.0 gals.	24,877,600 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,298,083.0	7,200.0 gals.	64,600 gals.
POND WATER WEIR TOTALIZER READING:	233,119.0	12,947,000.0 gals.	105,372,000 gals.

MONDAY - ALL RECORDERS OK - FIRST WEEKEND (FRI,SAT,SUN) WITH PIPE PLUGS IN THE BLACK DITCH, LEAKAGE STILL RATHER BAD AROUND PIPE.

WAUKEGAN SERVICE WATER SURVEY

Page 37

WEATHER CONDITIONS, to date:

DATE: 31-JAN-84

TIME: 800

AVG. TEMPERATURE: 18

CLOUD COVER: 0 %

PRECIPITATION: NONE AMOUNT: 0 INCHES

WATER FLOW:

TOTAL from 30-JAN-84

YEAR-TO-DATE

CITY WATER METER READING:	644,293,000.0	314,000.0 gals.	9,797,000 gals.
CITY WATER, RSD, METER READING:	80,514,600.0	38,000.0 gals.	822,700 gals.
CITY WATER, POWER HOUSE, METER READING:	39,236.0	323,988.0 gals.	11,707,700 gals.
SERVICE WATER METER, NORTH, READING:	426.5	84,691.5 gals.	2,655,890 gals.
SERVICE WATER METER, SOUTH, READING:	2,127.8	4,413,510.0 gals.	133,317,000 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	0.0	0.0 gals.	7,054,570 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	1,425.0	6,201,090.0 gals.	178,348,000 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	388.0	1,090,000.0 gals.	20,791,500 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	0.0	0.0 gals.	9,423,600 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	264.0	625,316.0 gals.	25,502,900 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,298,104.0	2,100.0 gals.	66,700 gals.
FOND WATER WEIR TOTALIZER READING:	236,909.0	3,790,000.0 gals.	109,162,000 gals.

TUESDAY - ALL RECORDERS OK - PIPE PLUGS AT BLACK DITCH STILL IN PLACE.

WEATHER CONDITIONS, to date:

DATE: 01-FEB-84

TIME: 000

AVG. TEMPERATURE: 21

CLOUD COVER: 0 %

PRECIPITATION: NONE AMOUNT: 0 INCHES

WATER FLOW:

TOTAL from 31-JAN-84

YEAR-TO-DATE

CITY WATER METER READING:	644,618,000.0	325,000.0 gals.	10,122,000 gals.
CITY WATER, RSD, METER READING:	80,552,900.0	38,300.0 gals.	861,000 gals.
CITY WATER, POWER HOUSE, METER READING:	39,860.0	331,968.0 gals.	12,039,700 gals.
SERVICE WATER METER, NORTH, READING:	468.6	82,726.5 gals.	2,738,620 gals.
SERVICE WATER METER, SOUTH, READING:	2,224.3	4,445,760.0 gals.	137,763,000 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	8.0	36,575.8 gals.	7,091,140 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	1,430.0	6,222,840.0 gals.	184,570,000 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	346.0	972,011.0 gals.	21,763,500 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	0.0	0.0 gals.	9,423,600 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	244.0	577,943.0 gals.	26,080,900 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,298,113.0	900.0 gals.	67,600 gals.
POND WATER WEIR TOTALIZER READING:	240,475.0	3,566,000.0 gals.	112,728,000 gals.

WEDNESDAY - ALL RECORDERS OK...

APPENDIX III

WATER SURVEY CALCULATIONS

PLANT : WAUREGAN
 PROJECT NAME : PLANT WATER BALANCE
 PROJECT NUMBER : 594-5224
 TYPE OF ASSIGNMENT : B

CAV. No.	SUBJECT	BY	DATE	REVISIONS
1	NOT ELIMINATED	DWS	2 Nov 85	1
2	Water 'Design'	DWS	9 Nov 83	2
3	Water Flows	DWS	22 Mar 84	3
4	Water Survey Update	DWS	10 April 84	

15
14
13
12
11
10
9
8
7
6
5
4
3
2
1

Manville Service Corporation

ENGINEERING CALCULATIONS

SUBJECT: WATER SURVEY UPDATE

PROJECT TITLE: PLANT WATER BALANCE

PROJECT NO.: SSW - 3224

BY DW Stone

PAGE Calc #4 1 of 2

DATE 10 April 84

WEIR DISCHARGE

OVER WEIR 6 APRIL 84 WEIR IS 33.25

$$Q = 3.33 (L - 0.2H) H^{1.5}$$

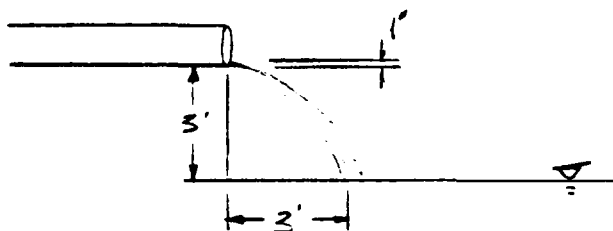
$$Q = 3.33 (33.25/12 - 0.2^{25}/12) (2.9/12)^{1.5} = 8.7 (0.70) = 6.2 \text{ cfs}$$

$$= 2780 \text{ gpm} = 4 \text{ MGD}$$

↑ WITHIN RANGE OF MEASUREMENTS
PROBABLY OKAY SINCE FLOW GENERALLY INCREASES TO THE WEEKEND & FALLS OFF TO MONDAY.

CULVERT DISCHARGE

CULVERT IS 13" Ø ID



CALC TIME TO FALL 3'

$$D = 32 \text{ ft}^2$$

$$t^2 = 3/32 = 0.09$$

$$t = 0.3$$

$$\text{HORIZ VEL} = 3/0.3 = 10 \text{ ft/sec}$$

$$\text{WATER IN 1" = 0.31 GAL/FT}$$

$$\text{WATER FLOW} = 0.31 (10) (60) = 186 \text{ GPM}$$

SAY 175 GPM

$$\text{DAILY FLOW} = 250,000 \text{ GPD}$$

SERVICE WATER PUMPING

	AMPS	HP	PRESS	FLOW (from curves)		
				TDH/HP	TDH/IMP	HP/IMP
Pump # 4	160	143	70 psi = 161'	2900	3000	2300
# 5	150	126	70	2500	3000	1600
# 6	148	125	70	2500	3000	1600
# 7	0	0	70	0	0	0
				7900 GPM	6000 GPM	5500 GPM
				11.4 MGD	8.6 MGD	7.9 MGD

DOES NOT AGREE. MOST PROBABLE CAUSES:

- RESTRICTED SUCTION LINES
- WORN IMPELLERS
- CAVITATION.

Manville Service Corporation

ENGINEERING CALCULATIONS

SUBJECT: WATER SURVEY UPDATE

PROJECT TITLE: PLANT WATER
BALANCE

PROJECT NO.: 594-3224

BY

D.W. Stowe

PAGE

Calc # 4

2 of 2

DATE

10 APRIL 84

ORIFICE DIFFERENTIALVARIED FROM 0.5 TO 1.5' H₂O ON A 100' 9" ϕ CIRCULAR SCALE.

ORIFICE DIAMETER = 14.375"

 $C_d = 0.599$

$$u_o = \frac{C_d}{\sqrt{1 - (d_o/d_p)^2}} \sqrt{\frac{2 g_c (P_a - P_b)}{\rho}}$$

$$= \frac{0.599}{\sqrt{1 - (14.375/17.125)^2}} \sqrt{\frac{2(32.2)(1/2.3) \times 144}{62.4}}$$

$$= (0.844) (8.03)$$

$$= 6.7 \text{ ft/sec}$$

$$\text{GPM} = (6.7)(1.13)(60)(7.48) = 3400 \text{ gpm} = 4.9 \text{ MGD}$$

$$\text{At } 0.5' \Delta P \quad u_o = 4.8 \text{ fps} = 2400 \text{ gpm} = 3.5 \text{ MGD}$$

CHECKS OUT WITHIN THE ACCURACY OF THE GAUGE.

Manville Service Corporation

ENGINEERING CALCULATIONS

SUBJECT: WATER FLOWS

PROJECT TITLE: PLANT WATER
BALANCE

PROJECT NO.: SS4 - 3224

BY DW STOWE

PAGE CALC #3 1 of 4

DATE 22 Mar 84

		CITY	NORTH	SOUTH	SEWER	POND
	4243000	337,000	87,000	3,819,000	400	2,443,000
	4,669,000	330,000	87,000	4,252,000	1,800	2,599,000
04 JAN 84	4,616	315,000	86,000	4,215,000	1,800	2,672,000
		286,000	94,000	4,308,000	2,700	2,971,000
06 JAN 84		814,000	257,000	12,126,000	16,200	10,025,000
		300,000	86,000	4,326,000	9,400	3,224,000
		320,000	86,000	4,441,000	10,000	3,350,000
		323,000	85,000	4,354,000	1,100	3,328,000
		332,000	84,000	4,321,000	1400	3,125,000
		623,000	240,000	12,388,000	2,000	11,353,000
		528,000	87,000	4,400,000	1,300	3,342,000
		331,000	90,000	4,331,000	1,500	3,502,000
		307,000	85,000	4,367,000	600	3,406,000
		326,000	86,000	4,381,000	400	3,501,000
		743,000	237,000	12,203,000	1,500	10,590,000
		356,000	81,000	4,358,000	500	3,527,000
		357,000	80,000	4,224,000	4,100	3,614,000
		332,000	82,000	4,404,000	3,300	4,134,000
		299,000	81,000	4,362,000	6,100	3,772,000
		811,000	239,000	12,430,000	7,200	12,947,000
		514,000	85,000	4,412,000	2,100	3,790,000
		325,000	83,000	4,446,000	900	3,566,000
		9,249,000	2,508,000	126,668,200	76,600	105,381,000
AVERAGE GPD		308,000	84,000	4,229,000	2500	3,513,000

CORRECT FOR 1ST WEEK OF LOW FLOW FROM POND

$$105,381 - (2,443,000 + 2,599,000 + 2,672,000 + 2,971,000) = 94,696,000$$

$$\text{AVE} = 3,642,000 \text{ GPD}$$

Manville Service Corporation

ENGINEERING CALCULATIONS

SUBJECT: WATER FLOWS

PROJECT TITLE: PLANT WATER
BALANCE

PROJECT NO.: SXL- 3224

BY

DWSTOWE

PAGE

CALC # 3 2 of 4

DATE

23 MAR 81

POND EVAPORATIVE LOSSES

Lake Evaporation = 29" / YEAR AT WAUKESHA

50% OCCURS IN MAY - OCT, LEAVES 6" IN 6 MOS = 1" / MONTH

POND WATER SURFACE AREA = 10 + 33 + 11.5 + 1 + 1 = 56.5 ACRES

WATER LOSS = $(\frac{1}{12})(56.5)(43,560)(7.48) = 1,500,000 \text{ GAL/MON}$
= 50,000 GPD

FORCED EVAPORATION - USE AVE INLET TEMPERATURE OF 50°F (NORTH STATION
WATER WAS ~ 75°F). TEMPERATURE IN MAIN SETTLING POND WAS 35°F

CANAL WATER WAS 40°F. FOR HEAT LOAD, USE CANAL TEMP AS BASE

= 50°F - 40°F = 10°F. USE POND OUTFLOW FOR WATER VOLUME

HEAT LOAD = $(50^\circ - 40^\circ)(3,500,000)(8.34) = 300 \times 10^6 \text{ BTU/DAY}$

WATER EVAPORATED = $300 \times 10^6 \text{ BTU/DAY} / 950 \text{ BTU/LB} / 8.34 = 40,000 \text{ GPD}$

TOTAL EVAPORATIVE LOSSES = 50,000 + 40,000 GPD = 90,000 GPD

PRODUCT LOSSES

WATER LOSSES IN THE PRODUCT CAN OCCUR IN FLEXBOARD, ROOFING & T-12.

LOSSES IN RF & SPECIALTIES ARE MINIMAL. STEAM LOSSES, ALSO.

FLEXBOARD

NOT ESTIMATED - SIMILAR TO T-12

Manville Service Corporation

SUBJECT: WATER FLOW

BY DW STOWE

PROJECT TITLE: PLANT WATER
BALANCE

PAGE
Calc 3 3 of 4

ENGINEERING CALCULATIONS

PROJECT NO.: 594-3224

DATE 29 MARCH 84

STEAM CONSUMPTION

MAKEUP IS FROM CITY WATER	=	10,122,000	GAL IN JAN.
OTHER USES	=	861,000	NORTH END DOMESTIC
		<u>861,000</u>	SOUTH END DOMESTIC (ASSUMED)
WATER TO BOILER HOUSE	=	8,400,000	
SOFTENER REGEN = $3 \times 30 \times 15,000$	=	<u>1,350,000</u>	
WATER TO BOILER (MAKEUP)		7,050,000	

STEAM PRODUCED = 70,307,000 LBS = 8,440,000 GALS H_2O
STEAM FOR HEATING = 34,274,000 LBS = 4,100,000 GALS H_2O

NOT ACCOUNTING FOR BLOWDOWN

$$7,050,000 / 8,440,000 = 83.5\% \text{ "makeup"}$$

OR

16.5 % CONDENSATE RETURN

PER M DESIGH, BLOWDOWN = 2.5% OF STEAM RATE

$$- 0.025 (8,440,000) = 210,000 \text{ GAL}$$

$$\text{WATER REQ'D FOR STEAM} = 7,050,000 - 210,000 = 6,840,000 \text{ GAL}$$

CONDENSATE RETURN = $[8,440,000 - 6,840,000] / 8,440,000 = 20\%$

ALLOWING FOR CONDENSATE RETURN $(7,050,000 - 210,000) = 6,840,000$ GAL
OF WATER WAS "LOST" FROM STEAM
SYSTEM

= 220,000 GPD

T-12

WATER LOSSES ARE PRIMARILY ASSOCIATED WITH DRYING T-12, BOTH STEAM & PRODUCT WATER CONTENT.

PRODUCT CONTENT = 4.61 LB / BOARD-FOOT (B.F) PRODUCT

PRODUCTION IN JAN = 1,440,000 B-F

$$\text{WATER LOSS} = (1,440,000)(4.61) / 8.34 = 796,000 \text{ GALS/MON}$$
$$= 25,000 \text{ GPD}$$

WATER LOSSES FROM MISCELLANEOUS COOLING ACCOUNTED FOR ON PAGE 2

SECONDARY DRAINAGE

DRAINAGE FROM THE NORTH WALL OF THE PONDS IS DISCHARGED TO CANAL THROUGH
12 - 14' HPE "CULVERT" (SEE CALC #4) = 250,000 GPD

Manville Service Corporation

ENGINEERING CALCULATIONS

SUBJECT: WATER FLOW SUMMARY

PROJECT TITLE: PLANT WATER
BALANCE

PROJECT NO.: S94-3224

BY

DW Stowe

PAGE

Calc #3

4 of 4

DATE

10 April 84

WATER IN

CITY WATER	308,000	GPD
SOUTH SERVICE	4,229,000	GPD
NORTH SERVICE	84,000	GPD
TOTAL INPUT	4,621,000	GPD

WATER OUT

CITY SEWER	2,000	GPD
POND WEIR	3,642,000	GPD
POND EVAPORATION	90,000	GPD
SECONDARY DRAINAGE	250,000	GPD
STEAM CONSUMPTION	220,000	GPD
PRODUCT LOSSES	25,000	GPD
TOTAL OUTPUT	4,229,000	GPD

(SEE PAGE 2)

WATER UNACCOUNTED FOR = 392,000 GPD

POND WATER AREA (NOT INCLUDING WALL AREA) APPROX $11.5 + 33 + 10 + 3$ (for
UNMARKED AREAS ON SK-7257-1) = 57.5 ACRES

$$\text{AVE SOIL PERMEABILITY} = 520,000 \left(\frac{1}{7.48} \right) \left(\frac{1}{24} \right) \left(\frac{1}{360} \right) \left(\frac{1}{57.5 \times 43560} \right) \\ (12)(2.54) = 9.5 \times 10^{-6} \text{ cm/sec} \Rightarrow 1 \times 10^{-5} \text{ cm/sec}$$

 10^{-5} IS A TYPICAL PERMEABILITY FOR SILT, LOESS & SILTY SAND



Johns-Manville

SUBJECT: TEMPORARY WEIR

PROJECT TITLE: WATER BALANCE

PROJECT NO.: SD- 3224

BY DW STONE

PAGE 2 1 of 4

DATE 7 Nov 85

ENGINEERING CALCULATIONS

REVISED

CHECKED:

DATE

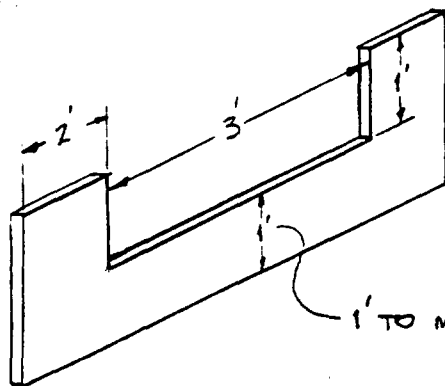
MAIN WEIR

INSTALL SQUARE WEIR AT POND OUTLET TO MEASURE FLOW

FLOW TO PLANT EST'D A 4 MGD = 2800 GPM THIS WOULD BE MAXIMUM DISCHARGE

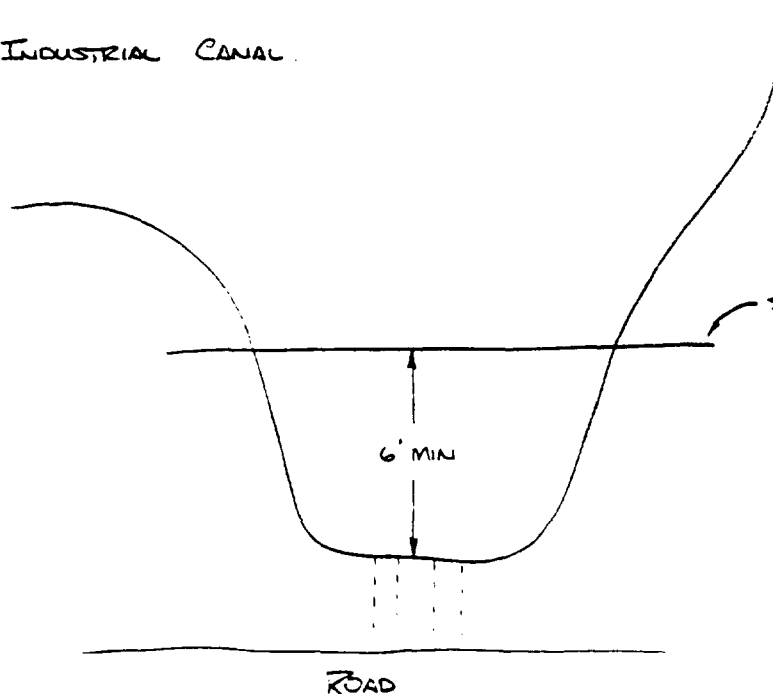
A 3' RECTANGULAR WEIR WOULD HAVE $H = 9"$ @ 2800 GPM

USE A 3' WEIR



WEIR MUST BE INSTALLED LEVEL.

INDUSTRIAL CANAL



SHEET PILING AS NECESSARY TO OBTAIN PROFILE ON NEXT PAGE.



Johns-Manville

ENGINEERING CALCULATIONS

SUBJECT: WEIR DESIGN

PROJECT TITLE: PLANT WATER
BALANCE

PROJECT NO.: 584 - 3224

BY DW Stowe

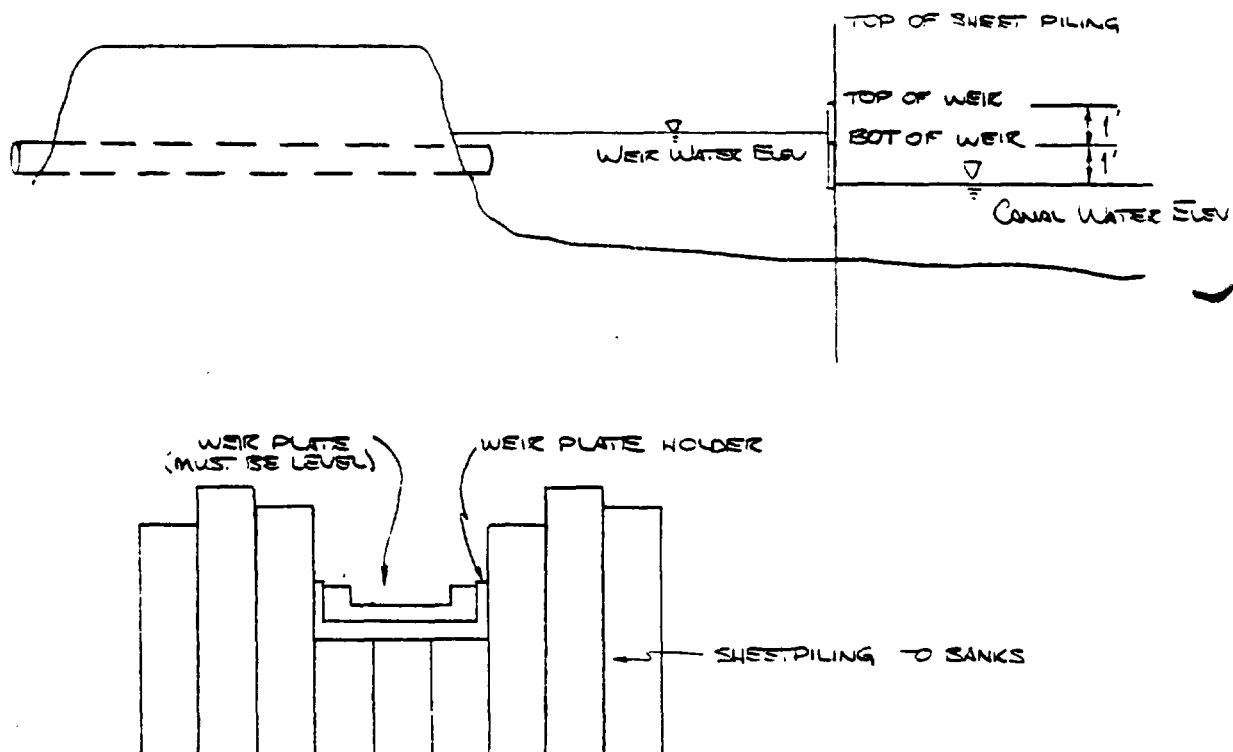
PAGE
Calc # 2 2 of 4

DATE
9 Nov 83

REVISED

CHECKED:

DATE



THE TRANSDUCER OF THE MANNING ULTRASONIC FLOW METER NEEDS TO BE MOUNTED ON THE IN-BORD SIDE OF THE SHEETPIILING. 50' OF CABLE IS PROVIDED TO KEEP THE RECORDER ITSELF ON SHORE. INSTRUCTIONS FOR MOUNTING THE TRANSDUCER WILL BE WITH THE FLOWMETER.

THE SHEET PILING JOINTS SHOULD BE AS WATER-TIGHT AS POSSIBLE TO FORCE ALL OF THE WATER OVER THE WEIR. OTHERWISE, THE FLOW MONITORING WILL NOT BE EFFECTIVE.

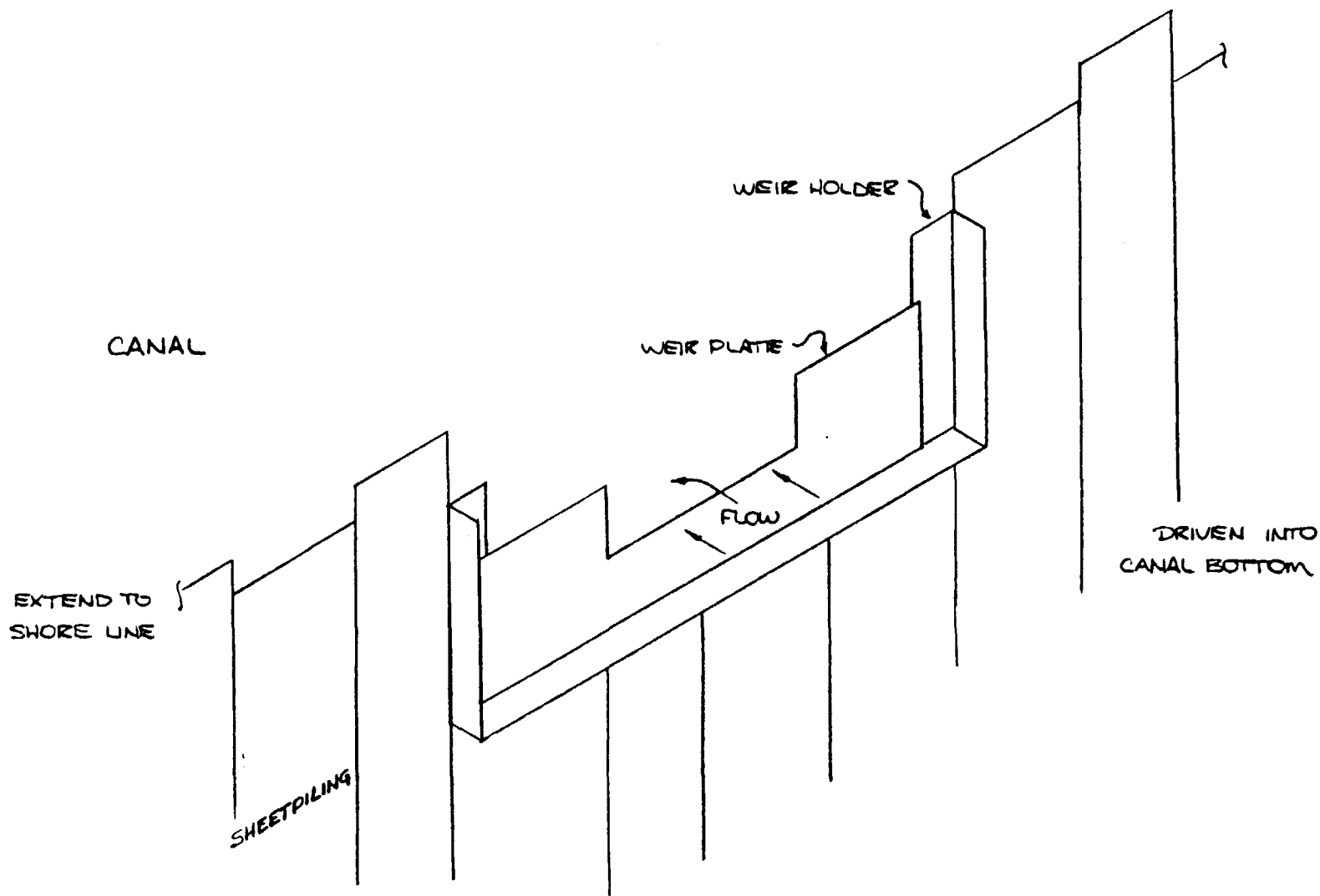
S-


Sym.

No.
req.

Description

Dwg. no.



DWN. BY	DW Stoue	9 Nov 83	Corporate Engineering/Denver  Johns-Manville	DISCIPLINE & SEQ. NO.	CALC # 2
CHK. BY				PROJ. NO.	
APPR. BY					594-3224
PROJ. ENG.				DWG. NO.	SK-3224-02-5
DIVISION				REV.	
SCALE	NONE		MAIN WEIR PLANT WATER BALANCE WAUKEGAN, ILL		

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-9-84

TEMP - AVERAGE: 21 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: _____ INCHES

WATER FLOW:

CITY WATER METER READING: 637491 000 TIME: _____

CITY WATER METER, RSD, READING: 798894 30 TIME: _____

CITY WATER METER, POWER HOUSE, READING: 23814 TIME: 6 AM

SERVICE WATER METER - NORTH, READING: 9504.0 TIME: 7:30 AM

SERVICE WATER METER - SOUTH, READING: 0093.6 TIME: _____

SERVICE WATER CHART RECORDERS: OKAY, NOT OKAY, ACTION: _____

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY, NOT OKAY, ACTION: Ø

BLACK DITCH, WEST PUMP: OKAY, NOT OKAY, ACTION: 3531

ROCK PILE, NORTH PUMP: OKAY, NOT OKAY, ACTION: Ø

ROCK PILE, SOUTH PUMP: OKAY, NOT OKAY, ACTION: 210

NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION: 25

NORTH STATION, WEST PUMP: OKAY, NOT OKAY, ACTION: 1309

CITY-SANITARY SEWER WEIR TOTALIZER READING: 1297.667 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

POND WATER DISCHARGE WEIR TOTALIZER READING: 155804 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

GENERAL COMMENTS: _____

APPENDIX I

WATER SURVEY DATA SHEETS

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-2-83

TEMP - AVERAGE: 22 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: _____ INCHES

WATER FLOW:

CITY WATER METER READING: 635409 000 TIME: _____

CITY WATER METER, RSD, READING: 797316 00 TIME: _____

CITY WATER METER, POWER HOUSE, READING: 19257 TIME: 6 AM

SERVICE WATER METER - NORTH, READING: 9193.3 TIME: 7:30 AM

SERVICE WATER METER - SOUTH, READING: 9470.2 TIME: _____

SERVICE WATER CHART RECORDERS: OKAY NOT OKAY, ACTION: _____

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY NOT OKAY, ACTION: _____

BLACK DITCH, WEST PUMP: OKAY NOT OKAY, ACTION: 5560

ROCK PILE, NORTH PUMP: OKAY NOT OKAY, ACTION: 128

ROCK PILE, SOUTH PUMP: OKAY NOT OKAY, ACTION: 1

NORTH STATION, EAST PUMP: OKAY NOT OKAY, ACTION: 2

NORTH STATION, WEST PUMP: OKAY NOT OKAY, ACTION: 250

CITY-SANITARY SEWER WEIR TOTALIZER READING: 12977432 TIME: _____

CHART RECORDER: OKAY NOT OKAY, ACTION: _____

POND WATER DISCHARGE WEIR TOTALIZER READING: 155094 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

GENERAL COMMENTS: _____

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-3-84

TEMP - AVERAGE: 27 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: _____ INCHES

WATER FLOW:

CITY WATER METER READING: 635746.000 TIME: _____

CITY WATER METER, RSD, READING: 797508.00 TIME: _____

CITY WATER METER, POWER HOUSE, READING: 19980 TIME: 6 AM

SERVICE WATER METER - NORTH, READING: 9237.4 TIME: 7:30 AM

SERVICE WATER METER - SOUTH, READING: 9553.1 TIME: _____

SERVICE WATER CHART RECORDERS: OKAY, NOT OKAY, ACTION: _____

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY, NOT OKAY, ACTION: 0

BLACK DITCH, WEST PUMP: OKAY, NOT OKAY, ACTION: 1444

ROCK PILE, NORTH PUMP: OKAY, NOT OKAY, ACTION: 5

ROCK PILE, SOUTH PUMP: OKAY, NOT OKAY, ACTION: 62

NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION: 8

NORTH STATION, WEST PUMP: OKAY, NOT OKAY, ACTION: 722

CITY-SANITARY SEWER WEIR TOTALIZER READING: 1297441 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

POND WATER DISCHARGE WEIR TOTALIZER READING: 157537 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

GENERAL COMMENTS: _____

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-4-84

TEMP - AVERAGE: 29 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: _____ INCHES

WATER FLOW:

CITY WATER METER READING: 626076 000 TIME: _____

CITY WATER METER, RSD, READING: 797780 00 TIME: _____

CITY WATER METER, POWER HOUSE, READING: 20730 TIME: 6am

SERVICE WATER METER - NORTH, READING: 9281.5 TIME: 7:30 Am

SERVICE WATER METER - SOUTH, READING: 9645.4 TIME: _____

SERVICE WATER CHART RECORDERS: OKAY, NOT OKAY, ACTION: _____

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY, NOT OKAY, ACTION: 0

BLACK DITCH, WEST PUMP: OKAY, NOT OKAY, ACTION: 1540

ROCK PILE, NORTH PUMP: OKAY, NOT OKAY, ACTION: 0

ROCK PILE, SOUTH PUMP: OKAY, NOT OKAY, ACTION: 340

NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION: 631

NORTH STATION, WEST PUMP: OKAY, NOT OKAY, ACTION: 558

CITY-SANITARY SEWER WEIR TOTALIZER READING: 1297460 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

POND WATER DISCHARGE WEIR TOTALIZER READING: 142136 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

GENERAL COMMENTS: _____

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-5-84

TEMP - AVERAGE: 29 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: _____ INCHES

WATER FLOW:

CITY WATER METER READING: 636391.000 TIME: _____

CITY WATER METER, RSD, READING: 798038.00 TIME: _____

CITY WATER METER, POWER HOUSE, READING: 21361 TIME: 6 AM

SERVICE WATER METER - NORTH, READING: 9325.1 TIME: 7:30 AM

SERVICE WATER METER - SOUTH, READING: 9736.9 TIME: _____

SERVICE WATER CHART RECORDERS: OKAY NOT OKAY, ACTION: _____

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY, NOT OKAY, ACTION: 9

BLACK DITCH, WEST PUMP: OKAY, NOT OKAY, ACTION: 1428

ROCK PILE, NORTH PUMP: OKAY, NOT OKAY, ACTION: 8

ROCK PILE, SOUTH PUMP: OKAY, NOT OKAY, ACTION: 374

NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION: 772

NORTH STATION, WEST PUMP: OKAY NOT OKAY, ACTION: 12

CITY-SANITARY SEWER WEIR TOTALIZER READING: 1297478 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

POND WATER DISCHARGE WEIR TOTALIZER READING: 142808 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

GENERAL COMMENTS: _____

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-6-83

TEMP - AVERAGE: 32 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: _____ INCHES

WATER FLOW:

CITY WATER METER READING: 636677 000 TIME: _____

CITY WATER METER, RSD, READING: 798249 00 TIME: _____

CITY WATER METER, POWER HOUSE, READING: 22019 TIME: 6 AM

SERVICE WATER METER - NORTH, READING: 9372.8 TIME: 7:30 AM

SERVICE WATER METER - SOUTH, READING: 9830.4 TIME: _____

SERVICE WATER CHART RECORDERS: OKAY NOT OKAY, ACTION: _____

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY, NOT OKAY, ACTION: 0

BLACK DITCH, WEST PUMP: OKAY, NOT OKAY, ACTION: 1410

ROCK PILE, NORTH PUMP: OKAY, NOT OKAY, ACTION: 0

ROCK PILE, SOUTH PUMP: OKAY, NOT OKAY, ACTION: 341

NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION: 756

NORTH STATION, WEST PUMP: OKAY, NOT OKAY, ACTION: 30

CITY-SANITARY SEWER WEIR TOTALIZER READING: 1297505 TIME: _____

CHART RECORDER: OKAY NOT OKAY, ACTION: _____

POND WATER DISCHARGE WEIR TOTALIZER READING: 145779 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

GENERAL COMMENTS: _____

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-10-84

TEMP - AVERAGE: 23 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: _____ INCHES

WATER FLOW:

CITY WATER METER READING: 637791000 TIME: _____

CITY WATER METER, RSD, READING: 79913200 TIME: _____

CITY WATER METER, POWER HOUSE, READING: 24488 TIME: 6 AM

SERVICE WATER METER - NORTH, READING: 9547.7 TIME: 7:30 AM

SERVICE WATER METER - SOUTH, READING: 0187.5 TIME: _____

SERVICE WATER CHART RECORDERS: OKAY, NOT OKAY, ACTION: _____

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY, NOT OKAY, ACTION: 0

BLACK DITCH, WEST PUMP: OKAY, NOT OKAY, ACTION: 1400

ROCK PILE, NORTH PUMP: OKAY, NOT OKAY, ACTION: 1

ROCK PILE, SOUTH PUMP: OKAY, NOT OKAY, ACTION: 356

NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION: 1

NORTH STATION, WEST PUMP: OKAY, NOT OKAY, ACTION: 600

CITY-SANITARY SEWER WEIR TOTALIZER READING: 1297761 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

POND WATER DISCHARGE WEIR TOTALIZER READING: 159028 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

GENERAL COMMENTS: _____

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-13-84

TEMP - AVERAGE: 22 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: _____ INCHES

WATER FLOW:

CITY WATER METER READING: 638766 000 TIME: _____

CITY WATER METER, RSD, READING: 800110 00 TIME: _____

CITY WATER METER, POWER HOUSE, READING: 26675 TIME: 6 AM

SERVICE WATER METER - NORTH, READING: 9678.0 TIME: 7:30 AM

SERVICE WATER METER - SOUTH, READING: 04722 TIME: _____

SERVICE WATER CHART RECORDERS: OKAY NOT OKAY, ACTION: _____

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY NOT OKAY, ACTION: 10

BLACK DITCH, WEST PUMP: OKAY NOT OKAY, ACTION: 445

ROCK PILE, NORTH PUMP: OKAY NOT OKAY, ACTION: 0

ROCK PILE, SOUTH PUMP: OKAY NOT OKAY, ACTION: 318

NORTH STATION, EAST PUMP: OKAY NOT OKAY, ACTION: 0

NORTH STATION, WEST PUMP: OKAY NOT OKAY, ACTION: 570

CITY-SANITARY SEWER WEIR TOTALIZER READING: 1297796 TIME: _____

CHART RECORDER: OKAY NOT OKAY, ACTION: _____

POND WATER DISCHARGE WEIR TOTALIZER READING: 1169431 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

GENERAL COMMENTS: _____

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-11-84

TEMP - AVERAGE: 8 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: _____ INCHES

WATER FLOW:

CITY WATER METER READING: 638111 00 TIME: _____

CITY WATER METER, RSD, READING: 799393 00 TIME: _____

CITY WATER METER, POWER HOUSE, READING: 25223 TIME: 6 AM

SERVICE WATER METER - NORTH, READING: 9591.5 TIME: 7:30 AM

SERVICE WATER METER - SOUTH, READING: 0253.9 TIME: _____

SERVICE WATER CHART RECORDERS: OKAY, NOT OKAY, ACTION: _____

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY, NOT OKAY, ACTION: 2

BLACK DITCH, WEST PUMP: OKAY, NOT OKAY, ACTION: 144

ROCK PILE, NORTH PUMP: OKAY, NOT OKAY, ACTION: 2

ROCK PILE, SOUTH PUMP: OKAY, NOT OKAY, ACTION: 5/16

NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION: 2

NORTH STATION, WEST PUMP: OKAY, NOT OKAY, ACTION: 570

CITY-SANITARY SEWER WEIR TOTALIZER READING: 1297771 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

POND WATER DISCHARGE WEIR TOTALIZER READING: 166578 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

GENERAL COMMENTS: _____

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-12-84

TEMP - AVERAGE: 14 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: _____ INCHES

WATER FLOW:

CITY WATER METER READING: 638434 000 TIME: _____

CITY WATER METER, RSD, READING: 799749 00 TIME: _____

CITY WATER METER, POWER HOUSE, READING: 25919 TIME: 6 AM

SERVICE WATER METER - NORTH, READING: 9635.0 TIME: 7:30 AM

SERVICE WATER METER - SOUTH, READING: 0328.4 TIME: _____

SERVICE WATER CHART RECORDERS: OKAY, NOT OKAY, ACTION: _____

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY, NOT OKAY, ACTION: 5

BLACK DITCH, WEST PUMP: OKAY, NOT OKAY, ACTION: 1005

ROCK PILE, NORTH PUMP: OKAY, NOT OKAY, ACTION: 0

ROCK PILE, SOUTH PUMP: OKAY, NOT OKAY, ACTION: 524

NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION: 0

NORTH STATION, WEST PUMP: OKAY, NOT OKAY, ACTION: 515

CITY-SANITARY SEWER WEIR TOTALIZER READING: 1297782 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

POND WATER DISCHARGE WEIR TOTALIZER READING: 1165706 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

GENERAL COMMENTS: _____

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-16-84

TEMP - AVERAGE: 15 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: _____ INCHES

WATER FLOW:

CITY WATER METER READING: 639589 000 TIME: _____

CITY WATER METER, RSD, READING: 800821 00 TIME: _____

CITY WATER METER, POWER HOUSE, READING: 28470 TIME: 6 AM

SERVICE WATER METER - NORTH, READING: 98003 TIME: 7:30 AM

SERVICE WATER METER - SOUTH, READING: 0741.1 TIME: _____

SERVICE WATER CHART RECORDERS: OKAY, NOT OKAY, ACTION: _____

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY, NOT OKAY, ACTION: 16

BLACK DITCH, WEST PUMP: OKAY, NOT OKAY, ACTION: 15

ROCK PILE, NORTH PUMP: OKAY, NOT OKAY, ACTION: 0

ROCK PILE, SOUTH PUMP: OKAY, NOT OKAY, ACTION: 15

NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION: 15

NORTH STATION, WEST PUMP: OKAY, NOT OKAY, ACTION: 1500

CITY-SANITARY SEWER WEIR TOTALIZER READING: 1297816 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

POND WATER DISCHARGE WEIR TOTALIZER READING: 180784 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

GENERAL COMMENTS: _____

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-17-84

TEMP - AVERAGE: 13 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: _____ INCHES

WATER FLOW:

CITY WATER METER READING: 639917 000 TIME: _____

CITY WATER METER, RSD, READING: 801174 00 TIME: _____

CITY WATER METER, POWER HOUSE, READING: 29226 TIME: 6 AM

SERVICE WATER METER - NORTH, READING: 9814.4 TIME: 7:30 AM

SERVICE WATER METER - SOUTH, READING: 0836.6 TIME: _____

SERVICE WATER CHART RECORDERS: OKAY, NOT OKAY, ACTION: _____

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY, NOT OKAY, ACTION: 6

BLACK DITCH, WEST PUMP: OKAY, NOT OKAY, ACTION: 1440

ROCK PILE, NORTH PUMP: OKAY, NOT OKAY, ACTION: 0

ROCK PILE, SOUTH PUMP: OKAY, NOT OKAY, ACTION: 505

NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION: 19

NORTH STATION, WEST PUMP: OKAY, NOT OKAY, ACTION: 174

CITY-SANITARY SEWER WEIR TOTALIZER READING: 12978 29 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

POND WATER DISCHARGE WEIR TOTALIZER READING: 184126 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

GENERAL COMMENTS: _____

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-18-84

TEMP - AVERAGE: 8 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: _____ INCHES

WATER FLOW:

CITY WATER METER READING: 640248 000 TIME: _____

CITY WATER METER, RSD, READING: 801525 00 TIME: _____

CITY WATER METER, POWER HOUSE, READING: 29942 TIME: 6 AM

SERVICE WATER METER - NORTH, READING: 9890.1 TIME: 7:30 AM

SERVICE WATER METER - SOUTH, READING: 0930.6 TIME: _____

SERVICE WATER CHART RECORDERS: OKAY, NOT OKAY, ACTION: _____

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY, NOT OKAY, ACTION: Ø

BLACK DITCH, WEST PUMP: OKAY, NOT OKAY, ACTION: 144

ROCK PILE, NORTH PUMP: OKAY, NOT OKAY, ACTION: Ø

ROCK PILE, SOUTH PUMP: OKAY, NOT OKAY, ACTION: 501

NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION: 14

NORTH STATION, WEST PUMP: OKAY, NOT OKAY, ACTION: 637

CITY-SANITARY SEWER WEIR TOTALIZER READING: 1297844 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

POND WATER DISCHARGE WEIR TOTALIZER READING: 187628 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

GENERAL COMMENTS: _____

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-19-84

TEMP - AVERAGE: -3 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: _____ INCHES

WATER FLOW:

CITY WATER METER READING: 640555 cco TIME: _____

CITY WATER METER, RSD, READING: 801779 oo TIME: _____

CITY WATER METER, POWER HOUSE, READING: 30618 TIME: 6 am

SERVICE WATER METER - NORTH, READING: 9933.6 TIME: 7:30 am

SERVICE WATER METER - SOUTH, READING: 1025.4 TIME: _____

SERVICE WATER CHART RECORDERS: OKAY, NOT OKAY, ACTION: _____

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY NOT OKAY, ACTION: 1

BLACK DITCH, WEST PUMP: OKAY, NOT OKAY, ACTION: 144/2

ROCK PILE, NORTH PUMP: OKAY, NOT OKAY, ACTION: 0

ROCK PILE, SOUTH PUMP: OKAY, NOT OKAY, ACTION: 292

NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION: 14

NORTH STATION, WEST PUMP: OKAY, NOT OKAY, ACTION: 600

CITY-SANITARY SEWER WEIR TOTALIZER READING: 1397852 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

POND WATER DISCHARGE WEIR TOTALIZER READING: 191034 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

GENERAL COMMENTS: _____

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-20-84

TEMP - AVERAGE: -1 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: _____ INCHES

WATER FLOW:

CITY WATER METER READING: 640881 000 TIME: _____

CITY WATER METER, RSD, READING: 802067 00 TIME: _____

CITY WATER METER, POWER HOUSE, READING: 31290 TIME: 6 AM

SERVICE WATER METER - NORTH, READING: 9977.4 TIME: 7.30 PM

SERVICE WATER METER - SOUTH, READING: 1120.5 TIME: _____

SERVICE WATER CHART RECORDERS: OKAY, NOT OKAY, ACTION: _____

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY, NOT OKAY, ACTION: ✓

BLACK DITCH, WEST PUMP: OKAY, NOT OKAY, ACTION: 1440

ROCK PILE, NORTH PUMP: OKAY, NOT OKAY, ACTION: ✓

ROCK PILE, SOUTH PUMP: OKAY, NOT OKAY, ACTION: 218

NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION: ✓

NORTH STATION, WEST PUMP: OKAY, NOT OKAY, ACTION: 615

CITY-SANITARY SEWER WEIR TOTALIZER READING: 1297856 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

POND WATER DISCHARGE WEIR TOTALIZER READING: 194535 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

GENERAL COMMENTS: _____

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-23-84

TEMP - AVERAGE: 19 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: 1" INCHES

WATER FLOW:

CITY WATER METER READING: 641824 000 TIME: _____

CITY WATER METER, RSD, READING: 802627 00 TIME: _____

CITY WATER METER, POWER HOUSE, READING: 33899 TIME: 6 PM

SERVICE WATER METER - NORTH, READING: 0098.1 TIME: 7:30

SERVICE WATER METER - SOUTH, READING: 1385.4 TIME: _____

SERVICE WATER CHART RECORDERS: OKAY NOT OKAY, ACTION: _____

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY, NOT OKAY, ACTION: TAPE RAN OUT *

BLACK DITCH, WEST PUMP: OKAY, NOT OKAY, ACTION: " 3780 *

ROCK PILE, NORTH PUMP: OKAY, NOT OKAY, ACTION: " *

ROCK PILE, SOUTH PUMP: OKAY, NOT OKAY, ACTION: " 516 *

NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION: " 15 *

NORTH STATION, WEST PUMP: OKAY, NOT OKAY, ACTION: " 700 *

CITY-SANITARY SEWER WEIR TOTALIZER READING: 1297871 TIME: _____

CHART RECORDER: OKAY NOT OKAY, ACTION: _____

POND WATER DISCHARGE WEIR TOTALIZER READING: 205125 TIME: _____

CHART RECORDER: OKAY NOT OKAY, ACTION: _____

GENERAL COMMENTS: * Tape out at 10:00 PM

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-24-84

TEMP - AVERAGE: 27 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: _____ INCHES

WATER FLOW:

CITY WATER METER READING: 624180 000 TIME: _____

CITY WATER METER, RSD, READING: 802915 00 TIME: _____

CITY WATER METER, POWER HOUSE, READING: 34857 TIME: 6 AM

SERVICE WATER METER - NORTH, READING: 0139.1 TIME: 7:30 AM

SERVICE WATER METER - SOUTH, READING: 1488.0 TIME: _____

SERVICE WATER CHART RECORDERS: OKAY, NOT OKAY, ACTION: _____

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY, NOT OKAY, ACTION: 500

BLACK DITCH, WEST PUMP: OKAY, NOT OKAY, ACTION: 50

ROCK PILE, NORTH PUMP: OKAY, NOT OKAY, ACTION: 5

ROCK PILE, SOUTH PUMP: OKAY, NOT OKAY, ACTION: 170

NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION: 500

NORTH STATION, WEST PUMP: OKAY, NOT OKAY, ACTION: 7

CITY-SANITARY SEWER WEIR TOTALIZER READING: 1297876 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

POND WATER DISCHARGE WEIR TOTALIZER READING: 208650 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

GENERAL COMMENTS: _____

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-25-84

TEMP - AVERAGE: 31 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: _____ INCHES

WATER FLOW:

CITY WATER METER READING: 642537 000 TIME: _____

CITY WATER METER, RSD, READING: 803180 00 TIME: _____

CITY WATER METER, POWER HOUSE, READING: 35809 TIME: 6 AM

SERVICE WATER METER - NORTH, READING: 01793 TIME: 7:30 AM

SERVICE WATER METER - SOUTH, READING: 15719 TIME: _____

SERVICE WATER CHART RECORDERS: OKAY, NOT OKAY, ACTION: _____

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY, NOT OKAY, ACTION: 360

BLACK DITCH, WEST PUMP: OKAY, NOT OKAY, ACTION: 1020

ROCK PILE, NORTH PUMP: OKAY, NOT OKAY, ACTION: 0

ROCK PILE, SOUTH PUMP: OKAY, NOT OKAY, ACTION: 200

NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION: Unit had been unplugged

NORTH STATION, WEST PUMP: OKAY, NOT OKAY, ACTION: 70

CITY-SANITARY SEWER WEIR TOTALIZER READING: 1297917 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

POND WATER DISCHARGE WEIR TOTALIZER READING: 212666 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

GENERAL COMMENTS: _____

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-26-84

TEMP - AVERAGE: 30 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: INCHES

WATER FLOW:

CITY WATER METER READING: 642869 000 TIME: _____

CITY WATER METER, RSD, READING: 803500 00 TIME: _____

CITY WATER METER, POWER HOUSE, READING: 36594 TIME: 6 Am

SERVICE WATER METER - NORTH, READING: 0220.8 TIME: 7:30 Am

SERVICE WATER METER - SOUTH, READING: 1667.5 TIME:

SERVICE WATER CHART RECORDERS: OKAY, NOT OKAY, ACTION: _____

AMMETERS :

BLACK DITCH, EAST PUMP: (OKAY) NOT OKAY, ACTION: 17

BLACK DITCH, WEST PUMP: OKAY NOT OKAY, ACTION: 1400

ROCK PILE, NORTH PUMP: OKAY NOT OKAY, ACTION: D

ROCK PILE, SOUTH PUMP: OKAY NOT OKAY, ACTION: 536

NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION: END

NORTH STATION, WEST PUMP: OKAY, NOT OKAY, ACTION: 125

CITY-SANITARY SEWER WEIR TOTALIZER READING: 1297950 TIME:

CHART RECORDER: OKAY NOT OKAY, ACTION: 116

POND WATER DISCHARGE WEIR TOTALIZER READING: 216400 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

GENERAL COMMENTS: _____

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-27-84

TEMP - AVERAGE: 30 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: INCHES

WATER FLOW:

CITY WATER METER READING: 643168 00 TIME:

CITY WATER METER, RSD, READING: 803778 00 TIME:

CITY WATER METER, POWER HOUSE, READING: 37150 TIME: 6 AM

SERVICE WATER METER - NORTH, READING: 0262.0 TIME: 7:30 AM

SERVICE WATER METER - SOUTH, READING: 1762.2 TIME:

SERVICE WATER CHART RECORDERS: OKAY, NOT OKAY, ACTION:

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY, NOT OKAY, ACTION:

BLACK DITCH, WEST PUMP: OKAY, NOT OKAY, ACTION:

ROCK PILE, NORTH PUMP: OKAY, NOT OKAY, ACTION:

ROCK PILE, SOUTH PUMP: OKAY, NOT OKAY, ACTION:

NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION:

NORTH STATION, WEST PUMP: OKAY, NOT OKAY, ACTION:

CITY-SANITARY SEWER WEIR TOTALIZER READING: 1298011 TIME:

CHART RECORDER: OKAY, NOT OKAY, ACTION:

POND WATER DISCHARGE WEIR TOTALIZER READING: 220172 TIME:

CHART RECORDER: OKAY, NOT OKAY, ACTION:

GENERAL COMMENTS:

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-30-84

TEMP - AVERAGE: 25 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: _____ INCHES

WATER FLOW:

CITY WATER METER READING: 643979 000 TIME: _____

CITY WATER METER, RSD, READING: 804766 00 TIME: _____

CITY WATER METER, POWER HOUSE, READING: 38627 TIME: 6 AM

SERVICE WATER METER - NORTH, READING: 0383.4 TIME: 7:30 AM

SERVICE WATER METER - SOUTH, READING: 2032.0 TIME: _____

SERVICE WATER CHART RECORDERS: OKAY, NOT OKAY, ACTION: _____

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY, NOT OKAY, ACTION: 422

BLACK DITCH, WEST PUMP: OKAY, NOT OKAY, ACTION: 1317 779/1050

ROCK PILE, NORTH PUMP: OKAY, NOT OKAY, ACTION: 5

ROCK PILE, SOUTH PUMP: OKAY, NOT OKAY, ACTION: 758

NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION: 4

NORTH STATION, WEST PUMP: OKAY, NOT OKAY, ACTION: 176

CITY-SANITARY SEWER WEIR TOTALIZER READING: 1298083 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

POND WATER DISCHARGE WEIR TOTALIZER READING: 233119 TIME: _____

CHART RECORDER: OKAY, NOT OKAY, ACTION: _____

GENERAL COMMENTS: _____

WAUKEGAN WATER BALANCE

WEATHER CONDITIONS:

DATE: 1-31-54

TEMP - AVERAGE: 18 °F

CLOUD COVER: 0% (CLEAR), 25%, 50%, 75%, 100% (TOTAL)

PRECIPITATION: NONE, FOG, DRIZZLE, RAIN, SNOW

AMOUNT: INCHES

WATER FLOW:

CITY WATER METER READING: 644293 000 TIME:

CITY WATER METER, RSD, READING: 805146 00 TIME:

CITY WATER METER, POWER HOUSE, READING: 39236 TIME:

SERVICE WATER METER - NORTH, READING: 426.5 TIME:

SERVICE WATER METER - SOUTH, READING: 2127.8 TIME:

SERVICE WATER CHART RECORDERS: OKAY NOT OKAY, ACTION:

AMMETERS:

BLACK DITCH, EAST PUMP: OKAY, NOT OKAY, ACTION:

BLACK DITCH, WEST PUMP: OKAY, NOT OKAY, ACTION:

ROCK PILE, NORTH PUMP: OKAY, NOT OKAY, ACTION:

ROCK PILE, SOUTH PUMP: OKAY, NOT OKAY, ACTION:

NORTH STATION, EAST PUMP: OKAY, NOT OKAY, ACTION:

NORTH STATION, WEST PUMP: OKAY, NOT OKAY, ACTION:

CITY-SANITARY SEWER WEIR TOTALIZER READING: 1298104 TIME:

CHART RECORDER: OKAY NOT OKAY, ACTION:

POND WATER DISCHARGE WEIR TOTALIZER READING: 236909 TIME:

CHART RECORDER: OKAY, NOT OKAY, ACTION:

GENERAL COMMENTS:

APPENDIX II

WATER SURVEY COMPUTER SUMMARY

WEATHER CONDITIONS, to date:

DATE: 03-DEC-84

TIME: 000

AVG. TEMPERATURE: 27

CLOUD COVER: 0 %

PRECIPITATION: NONE AMOUNT: 0 INCHES

WATER FLOW:

TOTAL from 02-JAN-84

YEAR-TO-DATE

CITY WATER METER READING:	635,746,000.0	337,000.0 gals.	1,250,000 gals.
CITY WATER, RSD, METER READING:	79,750,000.0	19,200.0 gals.	58,900 gals.
CITY WATER, POWER HOUSE, METER READING:	19,980.0	384,636.0 gals.	1,463,530 gals.
SERVICE WATER METER, NORTH, READING:	9,237.4	86,657.7 gals.	319,313 gals.
SERVICE WATER METER, SOUTH, READING:	9,553.1	3,819,180.0 gals.	14,700,900 gals.
BLACK DITCH, TOTAL MINUTES, EAST PUMP:	0.0	0.0 gals.	0 gals.
BLACK DITCH, TOTAL MINUTES, WEST PUMP:	1,414.0	6,153,220.0 gals.	21,645,100 gals.
ROCK PILE, TOTAL MINUTES, NORTH PUMP:	0.0	0.0 gals.	0 gals.
ROCK PILE, TOTAL MINUTES, SOUTH PUMP:	62.0	174,175.0 gals.	646,134 gals.
NORTH STATION, TOTAL MINUTES, EAST PUMP:	0.0	0.0 gals.	0 gals.
NORTH STATION, TOTAL MINUTES, WEST PUMP:	732.0	1,733,830.0 gals.	3,628,730 gals.
SANITARY SEWER WEIR TOTALIZER READING:	1,297,441.0	400.0 gals.	400 gals.
FOND WATER WEIR TOTALIZER READING:	137,537.0	2,443,000.0 gals.	9,790,000 gals.

TUESDAY - ALL RECORDERS OK - ALL PRODUCTION DEPTS. OPERATING EXCEPT ROOFING -
 ABOVE FREEZING TEMPS CAUSING SOME SNOW MELT - CITY WATER: P.H. METER SEEMS BAD